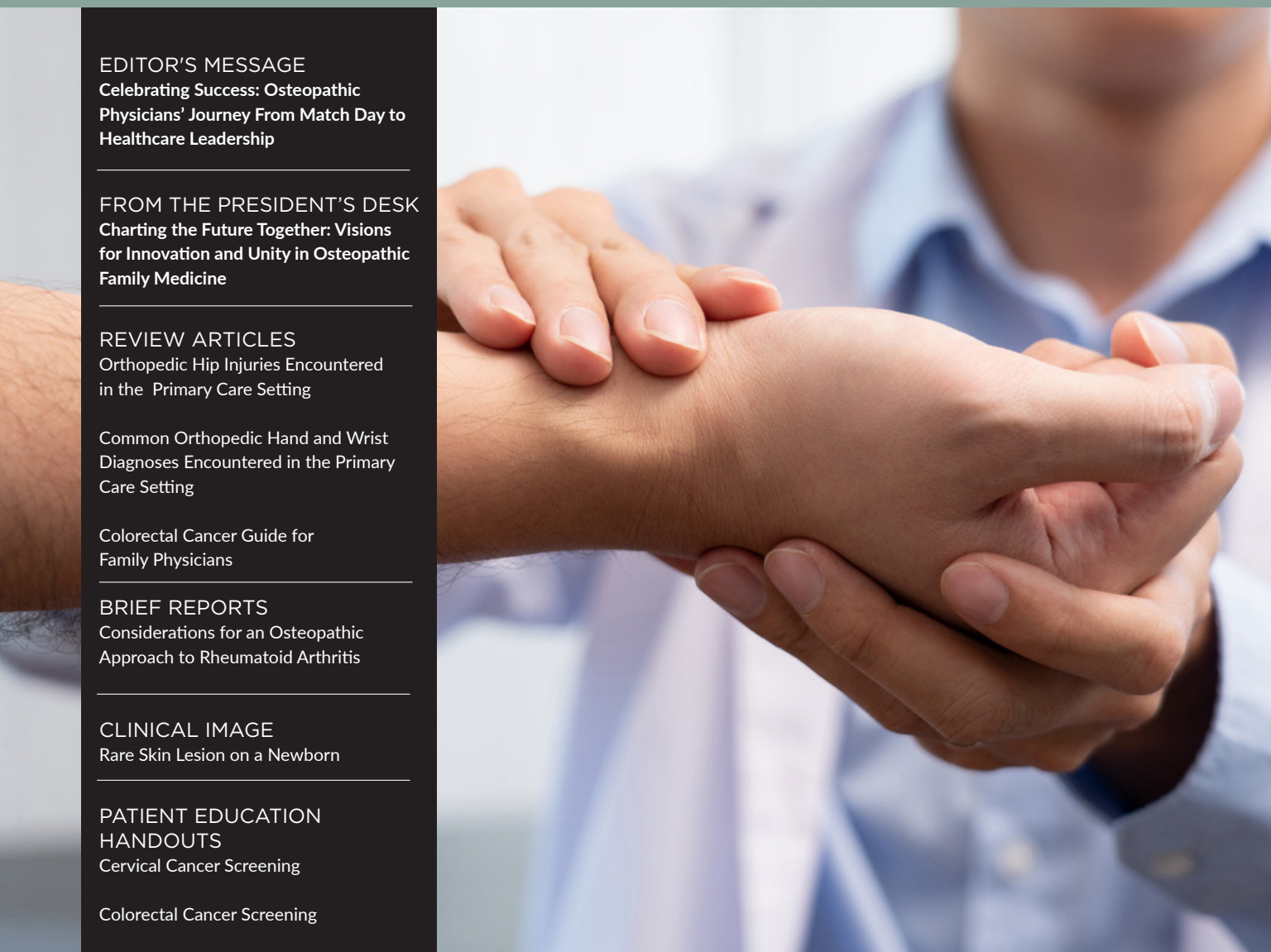
OFP

Osteopathic Family Physician

THE OFFICIAL PEER-REVIEWED PUBLICATION OF THE AMERICAN COLLEGE OF OSTEOPATHIC FAMILY PHYSICIANS

SPRING 2024
Volume 16 | Number 2
ofpjournal.com



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JUNE 14-15, 2024
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Dallas, TX

JUNE 26, 2024
Missouri ACOFP Summer Virtual CME Series
The biting truth about ticks

JULY 24, 2024
Missouri ACOFP Summer Virtual CME Series
Getting the Jump on Sports Injuries

AUGUST 2–4, 2024
Pennsylvania ACOFP
Hershey, PA

AUGUST 7–11, 2024
California ACOFP
Anaheim, CA

AUGUST 9–11, 2024
2024 Annual NCS-ACOFP CME Conference
Beaufort, NC

AUGUST 28, 2024
Missouri ACOFP Summer Virtual CME Series
Mental Health Assessments and Sports Injuries

SEPTEMBER 19–21, 2024
FMEC
Philadelphia, PA

SEPTEMBER 19–22, 2024
OMED 2024
American Osteopathic Association
San Diego, CA

SEPTEMBER 25, 2024
Missouri ACOFP Summer Virtual CME Series
Artificial Intelligence: Know Your Turf

SEPTEMBER 26–29, 2024
FMX - AAFP
Phoenix, AZ

APRIL 2–6, 2025
ACOFP 62nd Annual Convention & Scientific Seminars
Palm Springs, CA

OFP Calendar of Events

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EDITOR'S MESSAGE

Celebrating Success: Osteopathic Physicians' Journey From Match Day to Healthcare Leadership

Paula Gregory, DO, MBA, FACOFP

There is no better feeling of accomplishment than when a student matches into a desired residency program! This milestone means that students, faculty, administration, and staff have achieved a monumental task. All their planning, strategies, and work have culminated in that one special word: "Matched!"

The excitement continues as graduates fulfill their dreams and move on to the next phase of their training. Osteopathic physicians are at the forefront of their practice choices. Whether they choose primary or specialty care, many fill a critical need by relocating to rural areas of the United States, where healthcare services may not be as abundant or accessible. We are proud of the choices that students make to become part of the "healthcare solution."

According to a recent article published by the American Osteopathic Association (AOA), residency match and placement statistics reveal a record number of students matching this year, with 53% choosing primary care. In addition, DO students in 2023 had the highest placement rate of all applicant types. Dr. Ira P. Monka, DO, notes that, each year, the profession continues to grow and medical schools ensure a bright and successful future for DO students. Also according to the AOA, in 2023 DO students had the highest placement rate of all applicant types.

Osteopathic colleges are graduating exceptional physicians who will be impactful in solving the healthcare crisis. In addition, osteopathic colleges are fostering educational content that allows future physicians to become leaders, wherever they choose to practice. How well residency programs view our students speaks to the curriculum and to our educators who help students learn.

The goal of faculty is to bring students into the professional world through teaching, mentorship, and advocacy. Faculty in the colleges of osteopathic medicine are exceptionally skilled teachers who help students acquire knowledge and information to make informed decisions. Faculty members have deep ownership of the content and a passion for teaching curriculums that educate students to truly understand wellness and diseases. Students are nurtured, taught, and advised as they learn the basics and master the information. The great work done by faculty empowers students to fully understand and appreciate the workings of the human body, the cell, and the causes of diseases, as well as their remedies. Our future physicians will face unknown emerging diseases and comorbid conditions. Patients will need nurturing and guidance. Faculty have a deep impact on future physicians by giving them the tools needed to face the challenges of taking care of people for the next 30 to 40 years.

Physicians entering residencies are our future workforce, and we are hopeful that their knowledge and experience will lead them into the professional world with skill and compassion. Equally as promising are our residency programs, in which residents are carefully vetted for special program attributes, and individuals await "the match."

It is with excitement that we watch our new colleagues grow into excellent physicians and leaders. We are encouraged by our work with each osteopathic physician to alleviate the current healthcare crisis. Congratulations to all the graduates. We continue to look forward to your contributions!

FROM THE PRESIDENT'S DESK

Charting the Future Together: Visions for Innovation and Unity in Osteopathic Family Medicine

Brian A. Kessler, DO, DHA, FACOFP *dist*.

As Dear Members,

As I embark on my role as President, I am excited and deeply honored to guide us along a strategic path to fortify our profession and our impact together. This critical juncture provides a compelling chance to invigorate our collective initiatives and redefine the future of osteopathic family medicine—a field inherently enriched by its blend of time-honored practices.

I am enthusiastic about unveiling the strategic directions we will pursue together, shared within the pages of OFP. We find ourselves at an opportune moment to enhance our collective efforts in the dynamic field of osteopathic family medicine, propelled by an ever-changing environment and evolving patient needs. Embracing these changes requires a unified approach and a commitment to innovation and excellence within our ACOFP family.

Unity will be the cornerstone, symbolizing our shared vision for progress. As family physicians, the deep connections we forge with our patients reflect the bonds we must strengthen within our professional community. By supporting each other's endeavors, we will elevate the practice of osteopathic family medicine to new heights. It is through a united community; we can leverage our diverse experiences to drive innovation and improve patient care.

The healthcare landscape is undergoing rapid transformation, fueled by remarkable advancements in medical technology and significant shifts in healthcare policy. We must refine on our methodologies and incorporate new technologies and evidence-based practices into our care models to keep pace. We must provide our members with access to the necessary education and training to manage these changes adeptly. By continuously updating our skills and knowledge, we position ourselves as leaders in the healthcare field.

Furthermore, I am committed to amplifying our influence in healthcare policy discussions. This effort will ensure that the voices of osteopathic family physicians and our patients are not only heard but are a driving force in shaping policy. Equitable access to these advancements and a proactive stance in policy advocacy are crucial. They are not just steps but commitments to protect and advance the interests of osteopathic family physicians and enhance the well-being of our patients.

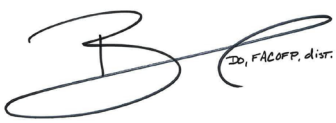
Our profession is rich with milestones that should be a source of pride and a catalyst for future innovation. From the pioneering efforts of our predecessors to today's breakthroughs, we are inspired by our colleagues' dedication and vision. As we honor this legacy, let us also celebrate our current achievements and the vibrant community we have built.

Looking forward, we stand at a crossroads. The future holds challenges and immense opportunities to shape a more inclusive, innovative, and comprehensive patient-centered healthcare environment. Our commitment to the principles of osteopathic medicine will guide us as we strive to integrate these values into every aspect of patient care, ensuring that each individual receives the treatment they deserve.

I pledge to lead with transparency, collaboration, and responsiveness to the needs and feedback of our esteemed members. I am eager to engage with each of you as we strive to advance our profession and uphold our commitment to exceptional care. Let us embrace this journey with optimism and determination, driven by our shared purpose to improve health and well-being for all.

Thank you for your unwavering support, dedication, and passion. Together, we will chart a bold and visionary path forward.

Sincerely,



Brian A. Kessler, DO, DHA, FACOFP dist.
2024–25 ACOFP President

REVIEW ARTICLE

Orthopedic Hip Injuries Encountered in the Primary Care Setting

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KEYWORDS

Hip pain

Osteoarthritis

Avascular necrosis

Femoral fracture

ABSTRACT

Hip pain and disorders are commonly seen in adults and children in the primary care setting. Primary care physicians can manage many of these disorders through physical examinations and basic radiographs, but some may pose a challenge requiring advanced imaging and specialist intervention. This article will review 12 common hip injuries encountered in primary care when conservative management is feasible and when a specialist referral is necessary.

INTRODUCTION

Hip pain and pathology are common chief complaints in the primary care setting. The hip comprises the femoroacetabular joint, a ball-and-socket joint formed between the femoral head and the acetabulum of the pelvis. The acetabulum is formed by the fusion of the three pelvic bones, including the ilium, ischium, and pubis. The teres ligament, the joint capsule, and the transverse ligament mainly stabilize the hip joint. The hip exhibits freedom of motion in all planes, including flexion, extension, abduction, adduction, internal rotation, and external rotation. The hip is critical in maintaining balance, weightbearing, and ambulation. Hip pain is often localized to one of three locations with certain disorders following typical pain patterns. These locations include anterior, lateral, or posterior pain. Hip pain may also occur due to lumbar or sacroiliac joint pathologies. A detailed physical examination and appropriate imaging are vital to determine the cause of the pain, as one disorder can exacerbate other pathologies of the hip in the acute or chronic setting.

Hip pain and hip disorders are commonly seen in adults and the pediatric population within the primary care setting. It is imperative to discern what can be managed conservatively by the primary care physician and when it is warranted to refer to a specialist for urgent management. This article will review 12 common hip disorders in the adult and pediatric population

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 Print ISSN: 1877-573X doi: 10.33181/160203

The authors have no conflicts of interest or financial disclosures.

FEMOROACETABULAR IMPINGEMENT

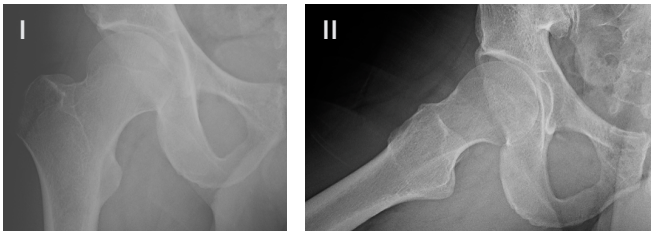
Femoroacetabular impingement is a common cause of anterior hip pain in young adults. Its incidence adjusted for age and sex is 54.4 per 100,000 person-years.[1] Femoroacetabular impingement is characterized by a cam deformity, a pincer deformity, or both. A cam deformity is a bony overgrowth involving the femoral head and neck junction, preventing the femoral head from rotating smoothly inside the acetabulum.[2] Alternatively, a pincer deformity is bony over coverage of the acetabulum that can be focal or global, resulting in compression of the labrum under the rim of the acetabulum.[2] Femoroacetabular impingement often presents without a specific injury and is gradual in progression. It is important to note that the diagnostic criteria have changed since being defined in 1999. A triad of clinical symptoms, examination findings, and radiographic findings are needed to reliably diagnose the condition.[1]

Patients typically present with pain or stiffness in the anterior groin or thigh. Pain is often exacerbated with flexion of the hip, sitting for long periods of time, or with flexion of the lumbar spine from a seated position.[3] While many patients with femoroacetabular impingement have had deformities since birth, it is possible to develop the abnormal anatomy over time, particularly in young athletes who require a wide range of motion for activity or patients with a previous history of slipped capital femoral epiphysis.[4] Passive range of motion and special tests, including FADIR and FABER tests, are utilized to diagnose intra-articular hip pathology. The flexion adduction internal rotation (FADIR) test is performed with passive flexion, followed by adduction and internal rotation of the hip. The test is positive if the pain is reproduced within the anterior groin/hip. The flexion abduction external rotation (FABER) test is performed with passive flexion and then abduction and external rotation of the hip. Similarly, the test is positive if the pain is reproduced in the anterior hip/groin.

Radiographs should be obtained to diagnose and evaluate the cause of bony pathology. 90-degree Dunn view and Meyer lateral views are best for visualizing cam deformities, while a standing anteroposterior view of the pelvis may be best for diagnosing the pincer deformity[5] (Figure 1). In a patient diagnosed with femoroacetabular impingement, first-line treatment is conservative, including rest, activity modification, nonsteroidal anti-inflammatory drugs (NSAIDs), and possibly physical therapy. If pain persists, a referral to an orthopedic surgeon is recommended for further evaluation. Two components may be addressed with orthopedic surgical intervention. First, surgical intervention may address repairing or removing damaged labral tissue. Secondly, surgical intervention can be done to arthroscopically correct the bony deformities of the femoral head, acetabulum, or both.

FIGURE 1:

Anteroposterior radiograph (I) and Frog leg view (II) of identical right hip demonstrating cam deformity in the anterosuperior position of the femoral head-neck junction (green arrow).



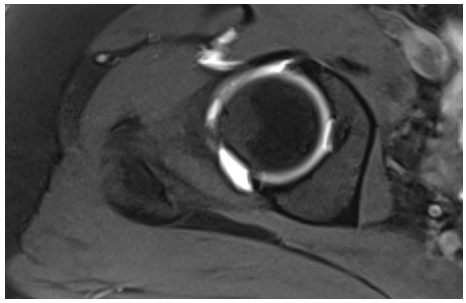
LABRAL TEAR OF HIP

The labrum is the cartilage that lines the acetabulum, assists in holding the femoral head within the hip socket, and aids in cushioning the hip joint. Labral tears are common in athletes who participate in sports, including soccer, football, and ice hockey and are associated with repetitive movements. A hip labral tear may also present following a traumatic injury. Labral tears often result from femoroacetabular impingement due to compression and excessive stress placed on the labrum from bony overgrowth and abnormalities within the hip joint.[2] Symptomatic labral tears are more common in females, which may be partially due to an increased incidence of hip dysplasia in women.[6] Anterior labral tears are the most common type of hip labral tear, typically caused by repetitive pivoting and twisting.

At presentation, patients may complain of pain in the hip, groin, or buttocks, particularly while ambulating. Range of motion is not typically restricted, but pain may be invoked at extremes. There may also be a catching, locking, or "clicking" sensation in the hip with ambulation. Additionally, physical examination testing, including FADIR and FABER, is helpful in the diagnosis of intra-articular hip pain. A standing radiograph should be obtained as the initial imaging test. The gold standard for diagnosing labral tears is direct visualization by arthroscopy, but less-invasive measures through imaging may be completed first. With recent advancements, a noncontrast 3-tesla magnetic resonance imaging (MRI) is as sensitive and specific as a magnetic resonance arthrography, previously the diagnostic standard for labral tears[7] (Figure 2). The noncontrast 3-tesla MRI also does not require a contrast injection. Standing AP X-rays are beneficial to detect any abnormalities in the alignment or shape of the hip joint, but they are not diagnostic for labral tear alone.

FIGURE 2:

MRI T2-weighted axial sequence of the hip demonstrates a partially detached tear of the anterior superior labrum (green arrow).



There are four grades of injury for hip labral tears. A grade I tear indicates a minor tear in the labrum's outer edge that does not extend into the cartilage. A grade II tear signifies a more significant tear extending into the labrum without reaching the cartilage. A grade III tear is a complete tear extending through the entire labrum while leaving the cartilage intact. A grade IV tear represents a complete tear that extends through the labrum and cartilage, exposing the underlying bone.[8]

Hip labral tears do not heal on their own. The goals of nonsurgical treatment focus on symptom management and preventing further damage to the labrum. This includes rest and activity modification, NSAIDs, injections, and particularly physical therapy that can assist in strengthening and stretching hip muscles to support the joint. Additionally, osteopathic manipulative techniques (OMT) can provide additional benefits in stretching local muscles, which effectively should aid in the overall balance of structures and preserving function for the patient. If conservative treatment fails or hip instability is noted, arthroscopic surgery can be completed to repair the tear. Patients presenting with femoroacetabular impingement and labral tears are more likely to need surgery than either pathology alone.[9]

OSTEOARTHRITIS

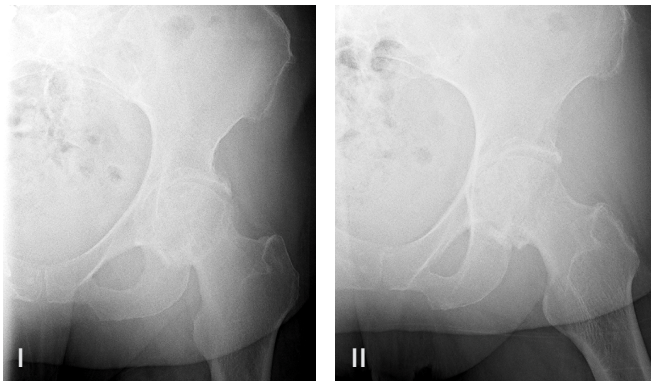
Osteoarthritis is the most common joint disorder in the United States. Osteoarthritis of the femoroacetabular joint is the most common cause of anterior hip pain in older adults.[10] Osteoarthritis is a degenerative joint disease resulting in losing articular cartilage over time. A diagnosis of hip osteoarthritis is based on symptoms, physical examination, and radiographic findings. Osteoarthritis of the hip typically presents gradually, with women being more likely to develop hip osteoarthritis than men.[10] Risk factors include older age, obesity, joint injuries, bone deformities, and repeated stress on the joint. Individuals with this condition may have pain with ambulation and sitting for long periods. In the morning or after long periods of inactivity, patients may develop a feeling of stiffness known as the "gel phenomenon" caused by a temporary

thickening of natural fluids inside the joint. Range of motion may be decreased, and certain maneuvers, including internal and external hip rotation in a flexed position, may exacerbate the pain. Radiation of pain typically presents to an anterolateral portion of the affected hip/groin.

Standing anteroposterior radiography of the pelvis is the imaging modality of choice. Radiographic findings include osteophyte formation, subchondral cyst formation, and subchondral sclerosis (Figure 3). The most common method for radiographically defining the degree of osteoarthritis is the Kellgren-Lawrence grading scheme, which grades joints from zero to four, with four being the most severe. A definite osteophyte found on a radiograph would define at least a grade 2 osteoarthritis, while complete joint space narrowing indicating bone-on-bone contact defines a Kellgren-Lawrence grade 4 osteoarthritis.[11] However, not all individuals with advanced radiographic findings have clinical disease, and not all individuals with clinical symptoms may have accompanying radiographic findings.

FIGURE 3:

Anteroposterior (I) and frog leg (II) radiographs of the hip demonstrate reduced joint space, subchondral sclerosis of the superior acetabulum, osteophytes, and remodeling of the acetabulum.



As osteoarthritis is a degenerative disorder, the treatment goals for hip osteoarthritis are to improve function, maintain mobility, and control pain. Initial nonsurgical treatments include activity modifications such as avoiding running or jumping to avoid flare-ups. Lifestyle modifications include weight loss to reduce stress on the joint. Physical therapy can help increase hip strength and decrease muscular compensation in the affected and contralateral hip. Remaining physically active is imperative for the management of symptoms. OMT, including muscle energy techniques, ligamentous articular strain, and articulatory techniques, such as the Spencer technique to the affected joint and hip, may be completed to improve motion by breaking up micro-adhesions that have formed over time. Medications such as NSAIDs may be used for symptomatic relief of pain, but risks and benefits must be considered, given long-term side effect profiles. Injections include corticosteroids, hyaluronic acid, or platelet-rich plasma injections, which may be used to relieve pain and mobility. If quality of life suffers or nonsurgical options cannot adequately relieve symptoms, a referral to an orthopedic surgeon and surgical options such as hip replacement surgery can be completed.

GREATER TROCHANTERIC PAIN SYNDROME

Greater trochanteric pain syndrome (GTPS) is a common cause of lateral hip pain. GTPS affects patients between the ages of 40 and 60 years. It is more commonly seen in females and has been found to have an incidence of 1.8 patients per 1000 per year.[12] GTPS was conventionally believed to be due to trochanteric bursitis, but it has been determined that it is the result of tendinopathy of the gluteus medius and gluteus minimus; this may or may not present with simultaneous pathology of the bursa. As the hip moves into adduction, the iliotibial band causes impingement of the gluteal tendons and bursa onto the greater trochanter through compressive forces. A lateral pelvic tilt results in weakness of the hip abductors and additionally increases compressive forces.

Patients with GTPS may present with lateral hip pain localized to the ipsilateral greater trochanter. Pain is worse with laying on it at night and weightbearing activities with possible radiation of pain to the lateral knee of the affected side. Overuse injuries, unaccustomed exercise, and long-distance running can trigger GTPS. Special tests, including direct palpation and single-leg stance tests, can be completed. Direct palpation of the greater trochanter has a positive predictive value of 83% for positive MRI findings. The single-leg stance test is positive if there is pain within 30 seconds of standing on one leg. The single-leg stance test has a 100% positive predictive value for positive MRI findings.[13] Additionally, the FADIR, FABER, and passive hip adduction while lying lateral (ADD test) can increase forces on the affected tendons and replicate the pain. Trendelenburg's gait may also be positive, given gluteus medius tendinitis and associated weakness.

GTPS is typically a clinical diagnosis, but a standing pelvic X-ray may be utilized in mixed clinical pictures to rule out differentials such as osteoarthritis. The treatment goals for GTPS include reducing the compressive forces across the greater trochanter, treating comorbidities, and strengthening gluteal muscles. Conservative therapy includes NSAIDs, targeted physical therapy for strengthening and optimizing biomechanics, weight loss, and osteopathic manipulative techniques such as counterstrain and muscle energy techniques.[14] Corticosteroid injections and therapeutic ultrasound can be effective in refractory cases. Exercise and load management are pivotal for overuse-induced GTPS. Surgical intervention is reserved for cases that have failed all prior available treatments.

PIRIFORMIS SYNDROME

The piriformis is a flat narrow muscle that attaches from the anterior surface of the sacrum to insert onto the greater trochanter of the femur. Piriformis syndrome occurs when the piriformis muscle compresses the sciatic nerve, resulting in nerve inflammation. Patients typically present with posterior hip pain, buttock pain, and a burning pain down the leg. It is found frequently during the fourth and fifth decades of life.[15]

The pain may be exacerbated by climbing stairs, physical inactivity, overuse such as long-distance running, and sitting for long periods. Additionally, congenital abnormalities of the sciatic tissues is also important. A delay in treating piriformis syndrome may lead to other pathologic conditions, including sciatic nerve involvement, chronic somatic dysfunction, and localized compensatory changes, including paresthesia, hyperesthesia, and muscle weakness.

HIP DISLOCATION

While rare, hip dislocations result in femoral head dislocation from the acetabular socket following traumatic hip injuries with a high incidence of associated injuries. Patients are typically young and present following high-energy trauma. The labrum, capsule, ligamentum teres, and the bony anatomy of the acetabulum intrinsically stabilize the hip. Ninety percent of hip dislocations are classified as posterior dislocations in which there is an axial load on the femur with the hip flexed and adducted. This typically presents as a "dashboard injury."[17] Co-morbid conditions associated with posterior dislocation include osteonecrosis, posterior wall acetabular fracture, sciatic nerve injuries, femoral head fractures, and ipsilateral knee injuries.[17] Alternatively, anterior dislocations occur with the hip in abduction and external rotation and may result in obturator nerve injury.

Patients typically present with acute pain, inability to bear weight, and deformity of the hip. Patients with a posterior dislocation will present with hip and leg in slight flexion, adduction, and internal rotation. Completing a detailed neurovascular examination is important, given the risk of sciatic nerve damage. Furthermore, assessing the ipsilateral knee for instability or injury is important. Patients with concerning findings should be sent to the emergency department where advanced trauma life support (ATLS) protocols can be completed due to association with other injuries. Anteroposterior and cross-table lateral radiographs should be obtained to determine dislocation. It is important to follow up with repeat imaging follow-reduction. CT may also be useful in determining the direction of dislocation, loose bodies, and associated fractures. Postreduction CT must be performed for all traumatic hip dislocations to assess for femoral head fractures, loose bodies, and acetabular fractures.[17]

Treatment options include surgical and nonsurgical intervention. Nonoperative intervention includes emergent closed reduction within 12 hours of injury for acute anterior and posterior dislocations; however, a femoral neck fracture would be a contraindication for nonoperative treatment. Closed reduction must have adequate sedation and muscular relaxation to perform the reduction. Operative treatments include open reduction with or without removal of incarcerated fragments. This is indicated by irreducible dislocation, delayed presentation, and evidence of incarcerated fragment. An open reduction and internal fixation (ORIF) surgery should be completed when fractures of the acetabulum, femoral head, or femoral neck are determined.[18]

FEMORAL NECK FRACTURE

Hip fractures account for over 300,000 hospitalizations in people aged 65 years and older annually in the United States.[19] Women experience approximately three-quarters of all hip fractures, which is associated with women falling at a higher rate and women having a higher incidence of osteoporosis. Greater than 95% of hip fractures occur due to a fall, particularly falling sideways.[19] The risk of fracturing a hip increases as patients get older. Most hip fractures occur at the femoral neck or intertrochanteric region. Hip-fracture patients typically present with an inability to bear weight, severe pain in the hip or groin, and a shortened, externally rotated, abducted leg while in the supine.

Radiographic imaging should be completed to assess femoral neck fracture. Anteroposterior view, cross-table lateral, and full-length femur are the recommended views for radiographic imaging. Specifically, the traction-internal rotation AP view is the most useful for defining fracture type. If there are negative radiographic results but fracture is still suspected, MRI may be utilized to rule out occult fracture.[20] Classification of femoral neck fractures is typically made using the Gardner classification from type I to type IV.

Nonoperative treatments with observation alone may be considered for patients who are nonambulatory at baseline, have minimal pain, and are high-risk candidates for surgery. Various surgical procedures based on patient demographics and fracture type may be indicated, including ORIF, cannulated screw fixation, sliding hip screw, and others.[21] Elderly patients with suspicion of hip fracture should be brought to surgery as soon as medically optimized. Surgical timing to operative management has a smaller effect than surgical method and quality of surgery.

Complications of femoral neck fracture include osteonecrosis in approximately 10% to 45% of patients. Greater initial displacement increases the risk for avascular necrosis (AVN), but nondisplaced injuries may still develop AVN. Nonunion is another complication with an incidence of 5% to 30%. There is a larger rate of hip dislocation following total hip arthroplasty. Overall mortality at 1 year is 25% to 30%, with a decreased mortality risk at 30 days and at 1 year when surgical intervention is performed within 24 hours of injury.[2]

Steps can be taken to prevent hip fractures, including evaluating the risk of falls and reviewing medications to prevent polypharmacy that may make the patient dizzy or tired. Women greater than 65 years need to be screened for osteoporosis. Regular physical activity and balance exercises should be done to improve leg strength and balance and reduce fall risk. Additionally, safety measurements in the home, including grab bars inside and outside the shower or next to the toilet, railings on the stairs, and reduction of objects that can be tripped over, aid in preventing falls commonly associated with hip fractures.

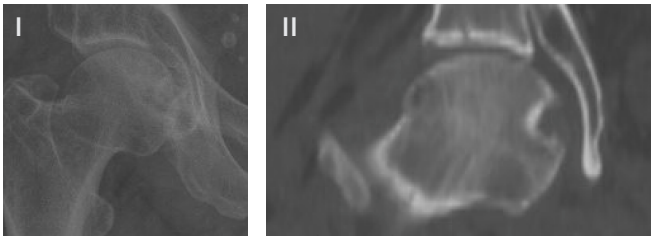
AVASCULAR NECROSIS OF THE HIP

AVN of the hip, or osteonecrosis, is the death of bone tissue due to vascular compromise of the medial femoral circumflex artery, which supplies the femoral head. It is a degenerative condition that typically affects the epiphysis of bones. While AVN can occur in the shoulder, elbow, or ankle, it most commonly occurs in the hips.[23] AVN most commonly affects adults aged 30 to 65 years but can present in all ages. Risk factors for AVN include alcoholism, AIDs, steroids, sickle cell disease, lupus, Gaucher disease, pancreatitis, trauma, infection, and Caisson disease. Symptoms can vary greatly, with AVN being discovered incidentally without any symptoms of debilitating hip pain; however, there are no physical exam findings specific to AVN.[24]

Early diagnosis of AVN can be joint-sparing but is often not visible on radiographs in early disease; early diagnosis usually requires MRI or CT25 (Figure 4). Staging of AVN utilizes the Steinberg classification, a modified version of Ficat staging, ranging from stage zero to stage six based on findings of X-ray and MRI.[26] Surgical intervention is indicated beginning at stage 3 in which there is evidence of subchondral collapse that demonstrates a crescent sign on imaging. Core decompression of the femoral head with or without stem cell placement had been the treatment for precollapse staging (stages 0-2) to alleviate pressure and increase blood flow in the femoral head.[27] However, left untreated, collapse of the hip joint can occur within a few months or years. If the joint collapses, the most effective treatment is total hip replacement surgery. If diagnosed early, nonsurgical treatments such as NSAIDs, injections, and physical therapy may help slow progression, but there is no curative treatment.

FIGURE 4:

Anteroposterior radiograph (I) and CT (II) of the femoral head demonstrate collapsing of the femoral head consistent with advanced AVN.



TRANSIENT SYNOVITIS

Transient synovitis, also known as toxic synovitis, is a benign and self-limiting cause of acute hip pain, often in children. It is also the most common cause of acute hip pain in children aged 3 to 10 years.[28] Transient synovitis occurs most commonly in one hip as a result of inflammation and edema of the tissues around the hip joint. Male patients are affected more commonly than female patients. Patients will typically present with pain in the affected hip that may result in a painful limp or inability to stand on that leg. Patients may resist movement in the hip and favor external rotation of the hip with knees flexed to reduce pressure on the joint.

It is essential to distinguish transient synovitis from other conditions, including septic arthritis, osteomyelitis, and pyomyositis. Thus, transient synovitis is often a diagnosis of exclusion. The gold standard to rule out septic arthritis is an invasive hip arthrocentesis.[29] Clinical risk algorithms, including the Kocher criteria, have been used to determine and prevent arthrocentesis in low-risk patients for septic arthritis.[30] Kocher criteria utilize white blood cell count >12,000 cells/mm3, erythrocyte sedimentation rate greater than 40 mm/h, weight-bearing status, and a fever greater than 101.3 degrees Fahrenheit as predictive markers. Hip X-rays may also be completed. While ultrasound as an imaging modality is becoming more commonly used, effusion does not directly distinguish between transient synovitis and septic arthritis.[31] If all these studies return without abnormal findings, a diagnosis of transient synovitis can be determined.

Conservative management is the treatment of transient synovitis. This may include rest, heating, and oral NSAIDs to reduce inflammation and edema around the hip. The patient's symptoms typically resolve in 3 to 4 days with a complete return to regular activity. If pathology is clinically suspected, follow-up X-rays of the hip can be done approximately 6 months after the resolution of symptoms to rule out any pathology. diagnosis of CLTI is made, vascular surgery should be consulted and preparations for bypass surgery made.

SLIPPED CAPITAL FEMORAL EPIPHYSIS

Slipped capital femoral epiphysis (SCFE) is the most common hip disorder in adolescents, typically from age 8 to 15 years. SCFE is an inferior and posterior slippage of the proximal femoral epiphysis on the femoral neck (metaphysis). It is associated with growth spurts, obesity, and less commonly with hypothyroidism, hypogonadism, and growth hormone supplementation. SCFE is more common in boys than girls. SCFE can present in bilateral hips simultaneously or sequentially in up to 50% of patients.[32] A patient presenting with SCFE typically endorses limping and poorly localized hip, groin, thigh, or knee pain. Specific exam findings that may be more suggestive of SCFE include decreased internal rotation of the hip and Drehmann sign.[33] Drehmann sign is positive when a patient is asked to flex their hip, and it automatically abducts and externally rotates.

SCFE is classified based on the stability of the physis. A SCFE is defined as stable if the patient can ambulate with or without crutches. It is considered unstable if the patient cannot ambulate, even using crutches. Bilateral hip radiography confirms the diagnosis. Both stable and unstable utilize anteroposterior views for diagnosis of SCFE; however, secondary views differ depending on whether the SCFE is stable or unstable. For stable SCFE, an AP view of bilateral hips should be done in addition to a frog-leg view. Alternatively, unstable SCFE should be confirmed with an AP view of bilateral hips and cross-table lateral views. It is important to compare the findings with those of the uninvolved side.

Upon confirmation of SCFE, treatment involves urgently referring to an orthopedic surgeon. The patient is to be placed in a wheelchair or non–weight-bearing crutches. It is critical not to attempt a manual relocation of the metaphysis as these maneuvers can result in AVN. For patients with stable SCFE, surgical stabilization is completed by in situ fixation with a single screw.34 The goals of unstable SCFE treatment are similar to in situ fixation; however, the approach for unstable SCFE focuses on aligning the proximal femur to decrease the rate of future femoroacetabular impingement syndrome for the patient. Postsurgical rehabilitation is a multistage approach emphasizing returning the patient to a normal gait and activity within the time frame set by the orthopedic surgeon. Stable SCFE patients can typically return to sports or significant activity following the closure of their growth plate.

DEVELOPMENTAL DYSPLASIA OF THE HIP

Previously called congenital hip dislocation, developmental dysplasia of the hip (DDH) is a pediatric disorder defined as an abnormality in the size, shape, orientation, or organization of the acetabulum, femoral head, or both. DDH refers to a spectrum of abnormalities in the immature hip ranging from minor dysplasia to full hip dislocation. Dysplasia of the acetabulum can result in a subluxed or dislocated hip. A hip is considered subluxed if the femoral head is displaced but is still making contact with a portion of the acetabulum. On the other hand, a dislocated hip has no contact between the acetabulum and the articular surface of the femoral head.[35] Both processes can lead to early degenerative joint disease. The most commonly affected patient group is firstborn females born in the breech position.[36] Additionally, family history is a risk factor for DDH. The left hip is affected more frequently in 60% of children. This is likely due to the left hip being adducted against the mother's lumbrosacral spine in the most common intrauterine position, the left occiput anterior position.[37]

In younger patients with DDH, the typical presentation includes palpable hip instability, unequal leg lengths, asymmetric thigh skinfolds, and a positive Allis sign. The Allis sign is considered positive if the knees are unequal heights when the hips and knees are flexed with the affected side having a lower knee.[38] In older children with DDH, gait abnormalities and limited hip abduction may occur. Physical examination and imaging are utilized in making a diagnosis of DDH. Special physical examination testing includes the Barlow and Ortolani maneuvers. The Barlow maneuver is completed when posterior pressure is placed on the inner aspect of the abducted thigh, and then the hip is adducted. It is considered positive when an audible "clunk" is heard, suggesting posteriorly dislocation of the femoral head. The Ortolani maneuver is completed when the thighs are softly adducted from the midline with anterior pressure on the greater trochanter. The test is considered positive when a soft click signifies a reduction of the femoral head into the acetabulum. Both Ortolani and Barlow maneuvers should only be completed at 3 months and younger due to difficulties with interpretations of the test.[38] If they are inconclusive, the patient should return in 2 weeks for further evaluation.

The radiographic examination will differ depending on age. Given the lack of ossification of the femoral head in patients under 6 months, ultrasonography is the imaging modality of choice for patients under 6 months old. However, it is overly sensitive as a screening tool in the first 6 weeks of life and should be avoided in these patient populations. Anteroposterior radiographs are most valuable for patients over 4 to 6 months old.[39] Multiple reference lines and angles are used to evaluate radiographic confirmation of DDH, including Hilgenreiner's and Perkin's lines. It is important to note that the United States Preventive Services Task Force (USPSTF) has concluded against routine screening for DDH, as the majority of DDH resolve spontaneously and require no intervention.[40]

Treatment goals for DDH include maintaining a reduction of the femoral head in the true acetabulum. In patients under 6 months, a Pavlik harness may maintain the hips in a flexed and abducted position. The hips should not be flexed over 60 degrees to reduce the risk of AVN and femoral nerve palsies. Ultrasonography should be completed after 3 weeks to confirm hip reduction and continued for at least 6 weeks. A spica cast may be used in patients aged 6 to 15 months.[41] If these treatments are unsuccessful or the patient is over 15 months, an open reduction should be completed, but surgical intervention becomes technically challenging as the patient ages.

LUMBAR AND SACROILIAC INVOLVEMENT

It is important to consider lumbar and sacroiliac causes when evaluating a patient with hip pain complaints. There are challenges to distinguishing between localized hip pain and pain referred from lumbar or sacral pathologies. Lumbar spinal dysfunctions can present as hip pain, most commonly in the posterior hip. Patients typically present with pain in the lumbar spine and the posterior hip and buttock. Patients may or may not report previous lumbar spinal trauma or diagnoses. Sacroiliac joint dysfunction may also present with posterior hip pain with tenderness to palpation directly along the affected sacroiliac joint. For both lumbar and sacral disorders, radiography will be the first line to evaluate for degenerative disease or arthritis. If inconclusive, advanced imaging such as MRI can be done to identify nerve involvement, disk herniation, or inflammation.[42]

CONCLUSION

The 12 hip disorders reviewed in this article signify some of the most common adult and pediatric hip diagnoses encountered in the primary care setting; however, this is not all-inclusive of various hip disorders. Reviewing these disorders can help to discern what can be managed in the primary care setting or when referral to a specialist is necessary.

LITERATURE SEARCH AND DATA SOURCES

While preparing this article, the search strategy involved reviewing primary research published online, communicating with primary care physicians and specialists to optimize the diagnoses chosen, and a thorough review of osteopathic techniques reviewed in the "Atlas of Osteopathic Techniques." Keywords were specific to the 12 diagnoses reviewed, including "osteoarthritis," "hip dislocation," "avascular necrosis," etc. Search dates for this research were conducted from 8/1/2023-11/15/2023. Cochrane and clinical evidence were used to determine sources that were up to date and relevant to the topics.

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REVIEW ARTICLE

COMMON ORTHOPEDIC HAND AND WRIST DIAGNOSES ENCOUNTERED IN THE PRIMARY CARE SETTING

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KEYWORDS

Hand

Wrist

Carpal tunnel syndrome

De Quervain's

Sports medicine

Orthopedics

ABSTRACT

Primary care physicians are crucial in diagnosing and managing hand and wrist pain. As the first point of contact for patients, primary care physicians develop individualized treatment plans, which may involve prescribing medications, recommending physical therapy, providing joint injections, or referring patients to appropriate specialists. By coordinating care and closely monitoring patients' progress, primary care physicians play a vital role in improving patients' quality of life and ensuring appropriate referrals and interventions are pursued when necessary. This article will review common hand and wrist orthopedic disorders and help primary care physicians better understand hand and wrist pathophysiology and management.

INTRODUCTION

Diagnosing and managing wrist and hand pain present unique challenges due to the intricate anatomy and complexity of the areas involved. While hand and wrist pain are prevalent, their causes can vary significantly, ranging from overuse injuries, repetitive strain, fractures, arthritis, and nerve compression to systemic diseases. Therefore, primary care physicians are crucial in accurately diagnosing and effectively managing these conditions. This article will review common hand and wrist disorders to determine when conservative management is appropriate and when referral to a specialist is necessary.

CARPAL TUNNEL SYNDROME

Symptoms

The symptoms of carpal tunnel syndrome (CTS) occur secondary to compression of the median nerve at the wrist from either direct anatomic impingement or from encroachment on the nerve stemming from underlying inflammation from a secondary cause.[1] Risk factors for CTS include obesity, female gender, diabetes, pregnancy, rheumatoid arthritis, hypothyroidism, connective tissue disease, and pre-existing median nerve mononeuropathy.[2] Individuals who perform repetitive hand or wrist motions, particularly those working in occupations requiring prolonged forceful motions, are at increased risk of developing CTS.[3]

Patients often present with numbness and/or tingling of the affected hand in the median nerve distribution—the first three digits and the radial half of the fourth digit. Symptoms typically fluctuate in severity over many years and often progress to continuous severe symptoms, which can alter how patients perform daily activities. A common complaint from those affected by CTS is numbness or tingling, which occurs while the wrist is held in prolonged flexion, such as reading a book, talking on the phone, or driving. Patients commonly report that shaking their hands seems to improve symptoms briefly. Symptoms also tend to worsen during sleep, and those with CTS will notice they are waking up with a sensation of "pins and needles" in the affected hand.

Diagnosis

Diagnosis of CTS is typically made clinically based on the patient's history and physical exam findings. Questions regarding characteristics, timing, aggravating and alleviating symptoms, as well as inquiry into pre-existing conditions, can be helpful. Tinel's and Phalen's tests are simple maneuvers that can safely and efficiently be performed at the bedside. Nerve conduction studies and electromyography can help confirm the diagnosis but are typically utilized to assess disease severity in patients considering surgical intervention.[4]

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 Print ISSN: 1877-573X doi: 10.33181/160202

The authors have no conflicts of interest or financial disclosures.

Treatment

Treatment for CTS is based on the severity of the patient's symptoms. For mild intermittent disease, cockup wrist splints (particularly worn at night), glucocorticoid steroid injections, and oral anti-inflammatory medications are sufficient in relieving symptoms. Referral for surgical decompression is advised in patients with signs of severe median nerve injury. The clinician should be observant for atrophy of the thenar muscles with concurrent weakness on physical exam. Often, patients with advanced CTS will report constant symptoms with a loss of finger dexterity and possibly hand or grip strength. A single injection of corticosteroid is typically the next therapeutic option. Injected corticosteroid is known to have an effective duration of 1 to 4 weeks in the target tissue; however, its long-term advantage for CTS is not supported by the available literature.[5]

Osteopathic manipulative treatment (OMT) has been recognized as a management option for CTS. The goals of OMT are to reduce sympathetic input through the upper thoracic, lower cervical, and thoracic inlet regions, improve tissue mobility, reduce nerve compression through reducing soft tissue edema, and improve muscle and tendon contraction and dimensions.[6] A recently published manuscript in the Osteopathic Family Physician journal by Baxter et al described various OMT techniques to treat CTS. These techniques include the myofascial release of the wrist, stretching the flexor retinaculum, the opponent's roll maneuver, counterstrain to the wrist and pronator teres, and the high-velocity, low-amplitude (HVLA) procedure to the carpal bones and radial head. In another study by Burnham et al, patients who underwent weekly OMT sessions for 6 consecutive weeks experienced improvement in symptoms and function associated with CTS.

Surgical carpal tunnel release should be considered after failed conservative treatments in patients with signs of severe disease (muscle atrophy, inability to perform daily activities) or in patients whose symptoms are not improving with optimized medical management of underlying causes.

DE QUERVAIN'S TENOSYNOVITIS

De Quervain's tenosynovitis affects the abductor pollicis longus (APL) and extensor pollicis brevis (EPB) tendons in the first extensor compartment at the styloid process of the radius. It is a common cause of wrist pain in adults and is most common in females between 40 and 50 years.[9] Common associations with the disease process are repetitive motions, specifically those that require the thumb to be extended and abducted.

Symptoms

Clinical presentation may include complaints of radial-sided wrist pain that is worsened with thumb or wrist movement, particularly thumb extension, and abduction. Pain is typically localized over the first dorsal compartment of the wrist at the extensor tendon.[10] Soft tissue swelling may be noted but is not always present. Some patients may complain of a catching or snapping sensation with thumb movement.

Diagnosis

Diagnosis is typically made clinically based on presenting symptoms and physical examination. A physical examination will elicit tenderness with or without swelling over the first dorsal compartment of the wrist. The provocative Finkelstein test, in which the thumb is flexed and held inside a fist, with the patient actively deviating the wrist ulnarly, causes sharp pain along the radial wrist at the first dorsal compartment. Radiographic images of the hand and wrist are typically negative but may help rule out underlying pathology. Ultrasound imaging is not necessary to diagnose, but if performed, it may show thickened extensor retinaculum, APL, and/or EPB tendons.[11]

Treatment

Conservative treatment is usually effective and includes resting the affected tendons by reducing repetitive motions, splinting the thumb with spica immobilization, ice, and oral or topical nonsteroidal anti-inflammatory medications. Corticosteroid injections may be useful, and in resistant cases, surgical release of the first dorsal compartment is an option.[12]

Trigger points in the APL muscle are relatively simple to treat and may relieve De Quervain's tenosynovitis symptoms. The practitioner may use one or two fingers to apply pressure over the trigger point in the muscle, applying pressure for ~30 seconds before releasing.

SCAPHOID FRACTURES

Scaphoid fractures are mostly seen in males 15 to 30 years of age.[13] They typically occur due to a fall on an outstretched hand with greater than 95° of hyperdorsiflexion load of the wrist in radial deviation.

Symptoms and Diagnosis

Patients usually present with mild pain at the radial side of the wrist, often worsened with movement or gripping. There may be wrist swelling or a feeling of heaviness at the anatomic snuffbox, which likely represents a wrist effusion (Figure 1). Snuffbox tenderness and/or pain with axial loading of the thumb should be treated as a scaphoid fracture until proven otherwise.[14] On physical exam, classic anatomic snuffbox tenderness was found to have a sensitivity of 85.71% and specificity of 29.62%, while scaphoid tubercle tenderness had a sensitivity of 95.23% and a specificity of 74.07% in the diagnosis of scaphoid fracture.[15] The absence of pain at these two locations makes diagnosing a scaphoid fracture highly unlikely. Other provocative tests should be performed to rule out other potential causes of pain.

Anteroposterior, lateral, and oblique radiographic views are required to evaluate a suspected scaphoid fracture. Management of scaphoid fractures depends on the anatomic location where the fracture occurs on the scaphoid bone (proximal, middle, distal) and whether the fracture is displaced or nondisplaced. A supplementary computed tomography (CT) may be performed to classify the fracture in fractures that are clearly visible on

radiographs, and displacement or instability is suspected.[13] Fractures in any anatomic zone of the scaphoid that are displaced are prone to nonunion and warrant referral to orthopedic surgery for further evaluation and potential for operative treatment.[16]

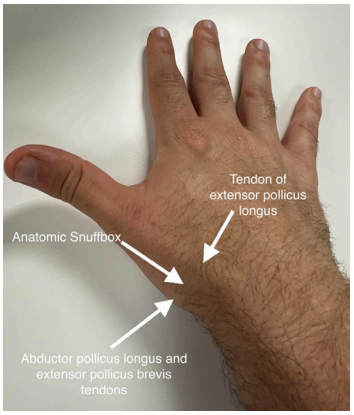
Treatment

Nondisplaced distal fractures heal well with strict immobilization in a short-arm thumb spica splint or cast. As the fracture line moves proximally, there is more risk of displacement and nonunion; therefore, it is appropriate to refer these patients for orthopedic evaluation. A long arm cast with thumb immobilization is appropriate if conservative treatment is attempted. In cases of suspected scaphoid fracture with negative initial radiographs, the wrist should be immobilized in a thumb spica splint or cast for 2 weeks, followed by repeated clinical and radiologic examinations.

Lymphatics of the upper extremity enter the thoracic or right lymphatic duct. Congestion at the thoracic inlet imposes myofascial restrictions that may impede proper lymphatic drainage and are, therefore, critical areas to address with OMT. While local OMT is an absolute contraindication in fractures, a physician can open the thoracic inlet using a direct or indirect approach to myofascial release. Relieving fascial restrictions at the thoracic inlet can promote the mobilization of inflammatory mediators and reduce edema, helping alleviate carpal tunnel symptoms.

FIGURE 1:

The anatomic snuffbox. Tenderness to palpation in this region warrants an X-ray to evaluate for a scaphoid fracture.



FIRST CARPOMETACARPAL JOINT OSTEOARTHRITIS

Osteoarthritis (OA) of the first carpometacarpal joint (CMC), often referred to as "thumb-base osteoarthritis," is a common cause of pain and disability. It is more prevalent in females and is strongly associated with age.[17,18]

Symptoms

Many patients present with complaints of pain at the location of the joint, reduced grip strength, loss of range of motion, and joint stiffness, leading to impaired hand function and difficulty with daily activities. Pain can radiate from the base of the thumb and wrist proximally to the distal forearm. For this reason, it is important to perform other provocative tests of the wrist and thumb to rule out other potential causes of wrist pathology.

Diagnosis

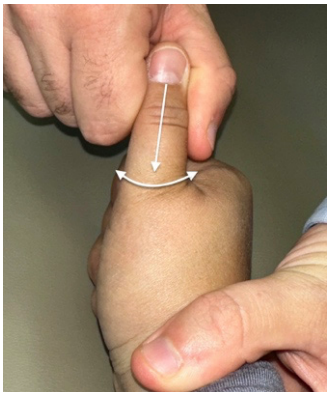
Diagnosis is often made clinically. Inspection of the hand may show signs of degenerative joint changes with bony prominence, soft tissue swelling, and limited range of motion in the joint. The grind test, which consists of axial loading and rotation of the thumb, has been found to have a sensitivity of 42% to 53% and specificity of 80% to 93% for CMC joint OA (Figure 2).[19] Definitive diagnosis can be achieved with AP, lateral, and oblique film radiographs. Findings consistent with OA include narrowing of the joint space, osteophytes, subchondral sclerosis, and cysts.

Treatment for CMC arthritis varies depending on the extent of the disease. Conservative modalities include avoidance of aggravating movements, ice, splinting, topical or oral nonsteroidal anti-inflammatory drugs (NSAIDs), and intra-articular corticosteroid injections. Splinting typically involves immobilization of the thumb with a thumb spica removable splint. Steroid injections into the CMC joint help control pain and reduce inflammation in and around the joint. A study by Day et al concluded that a steroid injection with 3 to 4 weeks of splinting for treating CMC joint arthritis of the thumb provided reliable long-term relief in thumbs with mild disease.[20]

OMT focuses on CMC joint mobilization using the anterior/posterior glide with distraction technique. In a double-blinded randomized control study performed by Villafañe et al, this technique decreased pain in the CMC joint in elderly female patients during six treatment sessions over 2 weeks. Surgical intervention is the last option for patients who have failed conservative treatment.

FIGURE 2:

Grind test for OA of the first carpometacarpal joint.



GANGLION CYST

Ganglion cysts are benign soft tissue tumors mostly encountered at the dorsal wrist. They can occur in any age group; however, they are more common in females in their twenties to forties.[22] Ganglion cysts are mucin-filled synovial cysts containing paucicellular connective tissue. They may be filled with fluid from a tendon sheath or joint.[23]

Symptoms and Diagnosis

On physical examination, ganglion cysts are usually 1- to 2-cm cystic structures, feeling much like a firm rubber ball that is well tethered in place by its attachment to the underlying joint capsule or tendon sheath. Most patients with ganglion cysts do not have symptoms besides swelling, and the clinical presentation is usually adequate for diagnosis. Ultrasound is often sufficient for assessing typical cysts and is the best initial diagnostic test, while magnetic resonance imaging (MRI) is the preferred imaging modality when atypical features or neurologic symptoms are present and in specific preoperative settings. The spontaneous resolution rate of untreated ganglion cysts ranges from 40% to 58%.[24] Therefore, reassurance is viable if the patient does not want any intervention. Patients must understand the benign nature of these cysts, as even after treatment, they have high recurrence rates.

Treatment

Conservative treatment options include aspiration and/or steroid injections. Conservative methods typically carry lower complication rates and are used for symptomatic relief if the patient does not want surgery. Surgical excision remains the gold standard for the treatment of ganglion cysts. Patients should be informed about the risk of recurrence after excision of ganglion cysts, which can occur in up to 15% of excisions.[25] As with any surgical procedure, excision has higher rates of complication and longer recovery periods when compared to conservative measures.

TRIGGER FINGER (STENOSING FLEXOR TENOSYNOVITIS)

Metacarpal fractures account for around 18% to 44% of total hand fractures, with the fifth metacarpal being the most fractured.[34]

Symptoms

Finger stiffness and painless snapping are the main initial characteristics of TF. Further development of the condition can cause catching or popping to become painful with flexion and extension at either the metacarpophalangeal (MCP) or proximal interphalangeal (PIP) joints. A painful nodule may be palpated in the palmar MCP area. The patient may report MCP stiffness or swelling in the morning or that they awaken with the digit locked and that it loosens throughout the day.

Diagnosis

TF diagnosis is made clinically based on the patient's presenting symptoms and physical examination findings. Ultrasound is being increasingly used to aid in the diagnosis by measuring the thickness of the affected tendon sheath compared with unaffected sheaths on the same or different hands. The degree of thickening seen on ultrasound is correlated with symptom severity.[28] The Quinnell grading system has been the most widely accepted system used to grade the severity of TF; however, it is rarely used clinically.

Treatment

Treatments for TF range from conservative to invasive. Noninvasive management of mild-to-moderate TF consists of a combination of NSAIDs, activity modification, heat, or ice. Splinting the affected finger in extension may be needed to allow the tendon to heal. While stretches and exercises may provide relief to some patients, there is no widely agreed on exercise regimen, and exercises may be offered on a case-to-case basis. If conservative management fails, corticosteroid injections directly into the tendon sheath are effective and have been shown to completely resolve symptoms in 50% to 90% of patients.[29] If needed, a second and third corticosteroid injection may be given 4 to 6 months apart, but referral should be considered for surgical management after three unsuccessful injections. A newer alternative to corticosteroid injections, extracorporeal shockwave therapy (ESWT), is effective in symptom management but remains a third-line option behind conservative management and corticosteroid injections.[30] Surgical options include open surgical release and percutaneous release of the A1 sheath and are reserved for cases of severe TF that has failed conservative management.

DUPUYTREN'S CONTRACTURE

Symptoms

While TF is characterized by inflammation and catching of the flexor tendon, leading to difficulty in finger movement, Dupuytren's contracture involves thickening and tightening of connective tissue in the palm of the hand. TF and Dupuytren's contracture often present similarly and may be seen concurrently; as such, the primary care physician should consider both when initially diagnosing Dupuytren's contracture and vice versa. There is a strong genetic component in developing Dupuytren's contracture. Diabetes mellitus, hepatic diseases, smoking, HIV, epilepsy, and chronic occupational use of vibrating tools have been identified as risk factors.[31] Unlike TF, the symptoms of Dupuytren's contracture are often irreversible and progressive.

Patients with Dupuytren's disease will typically initially notice a palpable nontender nodule near the distal palmar crease, which progresses into a fixed flexion contracture of the affected fingers at the MCP and PIP joints. At this stage, the patient typically experiences a loss in the range of motion of the hand and palpable cords in the palm extending into the digits. The condition is rarely painful.

Diagnosis

Diagnosis is typically made clinically. The tabletop test is performed by having the patient attempt to place the palm flat on the exam table. If there is any flexion contracture deformity, the patient cannot straighten the fingers, resulting in a positive test.[32] While imaging studies such as X-rays and ultrasounds may demonstrate underlying bony abnormalities and thickening of the palmar fascia, they are not necessary nor clinically useful in diagnosing or monitoring the condition.

Treatment

Management of Dupuytren's contracture is dictated by the patient's quality of life. Many patients with a positive tabletop test, MCP contracture of 30°, or PIP contracture of 15 to 20° will elect to have treatment.[33] Management typically starts with conservative measures, including physical/occupational therapy, splinting, bracing, and home stretches/exercises. Corticosteroid injections may be attempted but are not as effective as when used for TFs. Other modalities such as needle aponeurectomy and collagenase injections have been studied, but more research is needed to warrant their use in the primary care setting. Referral to a hand surgeon should be considered if there is any sign of disease progression or conservative management failure as surgery is the mainstay of treatment with Dupuytren's disease.

METACARPAL FRACTURES

Metacarpal fractures account for around 18% to 44% of total hand fractures, with the fifth metacarpal being the most fractured.[34]

Diagnosis

A thorough history and physical exam must be done with a focus on key aspects of the patient's history, including age, hand dominance, occupation, and mechanism of injury. Specific components of the physical exam include assessing for shortening of any digit compared to the opposite hand or rotational deformity. The overriding of one finger over the other at the time of presentation is most useful for detecting a rotational deformity. A more subtle way to detect malrotation occurs when the patient flexes their fingers into their palm. All the fingers should point towards the scaphoid tuberosity when flexed; however, in the presence of a rotational deformity, scissoring of the fingers becomes obvious.[35] Three radiographic views (posterior-anterior or anterior posterior, lateral, and oblique) are necessary for diagnosis and should be ordered initially when a fracture is suspected. Metacarpal fractures are divided into head, shaft, or neck fractures.

Metacarpal Head Fractures

Metacarpal head fractures are rare yet challenging to treat because of their involvement with the articular surface, increasing the risk for osteonecrosis. For fractures of the metacarpal head that involve less than 20% of the joint surface, nonoperative management can be undertaken with immobilization in the intrinsic plus position with a splint (Figure 3).[36] For those fractures with a greater disruption of the articular surface, referral to an orthopedic hand surgeon is indicated.

Metacarpal Neck Fractures

Metacarpal neck fractures typically result from direct trauma, such as when a patient strikes a hard surface with a clenched fist or may be seen following falls or crush injuries. The most frequently encountered metacarpal neck fractures occur at the fifth metacarpal neck, otherwise known as "boxer's fracture." While there are no widely accepted guidelines, in general, metacarpal neck fractures with angulation of less than 10° for the index finger, less than 15° for the long finger, less than 30° for the ring finger, and less than 40° for the small finger that have no associated rotational deformity may be managed conservatively, with immobilization in the intrinsic plus position for 4 weeks followed with serial radiographs.[37] For metacarpal neck fractures with a rotational deformity, the Jahss reduction maneuver may be attempted, followed by splint or cast immobilization. It is important to note that a neurovascular examination should be undertaken before and following any reduction attempt. Referral to a hand surgeon is necessary for a comprehensive evaluation if any malrotation is detected, regardless of a successful closed reduction.

Metacarpal Shaft Fractures

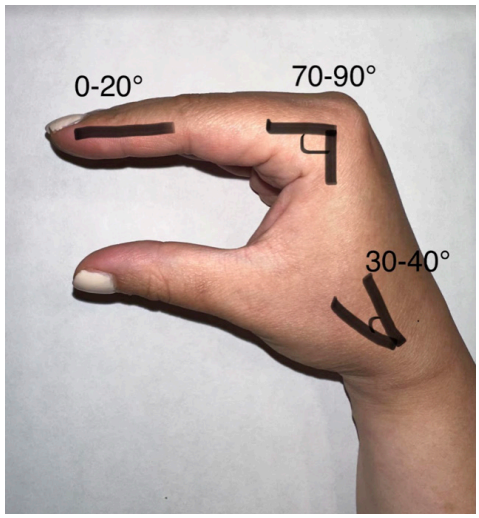
As with metacarpal neck fractures, metacarpal shaft fracture injuries that are minimally or nondisplaced without significant angulation, rotational deformity, or shortening, can be managed conservatively with cast immobilization for 4 weeks, with the MCP joints placed in 70 to 90° of flexion followed by serial radiography.[38] The presence of rotational deformity, significant metacarpal shortening, or prominent dorsal deformity should be referred for consideration in operative management.

THUMB SPRAIN (ULNAR COLLATERAL LIGAMENT INJURY)

A sprained thumb occurs when the ligaments that support the thumb are stretched beyond their limits, leading to damage. Most thumb sprains involve the ulnar collateral ligament (UCL) of the thumb. The UCL is located on the medial side of the MCP joint, extending from the head of the first metacarpal and the base of the proximal phalanx. The UCL is the primary restraint to valgus stress. Hyperabduction and hyperextension forces applied to the MCP joint are the usual causes of this stress.[39] The condition has

FIGURE 3:

Intrinsic plus position. The hand should be splinted in this position for metacarpal head fractures involving more than 20% of the joint surface.



been referred to as "gamekeeper's thumb" due to the observed association of this injury in gamekeepers who sustained chronic valgus strain injury of their thumbs when breaking rabbit necks. The term "skier's thumb" exists for the acute counterpart of this injury because it is prevalent among skiers.

Symptoms and Diagnosis

In acute cases, UCL injuries present with a history of trauma and pain with difficulty moving the thumb. Bruising and swelling at the base of the thumb may also be seen. In chronic cases, there may be weakness in the thumb-index pinch grip and instability.[40] The weakness of the pinch grip leads to marked limitations in basic activities of daily living, such as opening jars or turning keys. If left untreated, the joint laxity may lead to degeneration, increasing the risk of arthritis of the thumb MCP joint.[41] Performing a valgus stress test by abducting the thumb at its base can help to determine if any laxity or complete disruption of the UCL exists. Contralateral comparison with the unaffected thumb can help establish a baseline to delineate further the degree of tear or injury.[42]

Anteroposterior and lateral X-ray films of the thumb may be taken to rule out any associated bony injuries. Associated bony avulsion fractures are seen in 20% to 30% of UCL ruptures.[43] Ultrasound may be used at the bedside to assess for MCP joint laxity. MRI is most sensitive and specific for UCL injuries, and avulsion fractures but may be difficult to obtain in the acute setting.

Treatment

Patients with UCL injuries should be urgently referred to hand surgery when an avulsion fracture is confirmed or suspected, a displaced fracture is suspected in an acute grossly unstable joint, or cases of volar subluxation are seen on radiographs.[44] Without the above findings, UCL injuries can be treated with rest, ice, and immobilization by applying a thumb spica splint. The recommended timeframe for the typical immobilization is 3 weeks. Physical therapy may be utilized.

CONCLUSION

Management of wrist and hand pain involves a multidimensional approach, often encompassing a combination of pharmacologic interventions, physical therapy, occupational modifications, splinting, and sometimes referral to specialized hand surgeons. Primary care physicians are pivotal in coordinating and monitoring these treatment modalities, ensuring optimal patient outcomes, and fostering a continuum of care that extends beyond the confines of a single visit. With a better understanding of the disorders and their initial evaluation and management, indications for referral to a musculoskeletal specialist, and the need for operative management, primary care physicians can better aid in diagnosing, caring for, and facilitating recovery in their patients with these common disorders.

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REVIEW ARTICLE

COLORECTAL CANCER GUIDE FOR FAMILY PHYSICIANS

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KEYWORDS

Colorectal cancer

Osteopathic treatment models

Cancer screening

ABSTRACT

Colorectal cancer is a leading cause of morbidity and mortality in the United States. Family physicians play an integral role in educating patients about the current screening recommendations and modalities of available screening to improve early detection and allow treatment at its earliest stages. Family physicians must have the tools to minimize barriers to screening, alleviate patient concerns about screening modalities available, and educate patients on lifestyle modifications that have the potential to significantly lower the risk of developing colorectal cancer. Osteopathic physicians should consider the five osteopathic treatment models when developing an individualized plan for each patient.

INTRODUCTION

Colorectal cancer is the third leading cause of cancer death in the United States among both men and women.[1] Approximately 4.1% of adults will be diagnosed with colorectal cancer within their lifetime, with an estimated 153,000 new cases in 2023 alone.[2] There are 36.6 new cases per 100,000 adults per year, with a death rate of 13.1 per 100,000. In 2023, it is projected that 7.8% of all new cancer diagnoses are colorectal cancer, and 8.6% of cancer-related deaths are attributed to colorectal cancer. Despite these statistics, only 72% of US adults are up to date with colorectal cancer screening, with screening rates dropping significantly to less than 62% for Asian, American Indian, and Alaskan Native individuals.[3]

If colorectal cancer is detected in the early stages, the 5-year survival rate is 90% for those diagnosed with localized disease.[4] To improve early disease detection, in 2021, the United States Preventative Service Task Force (USPSTF) updated its guidelines to recommend that healthy individuals with average risk begin screening for colorectal cancer at age 45 years rather than 50 years, as previously recommended.[5]

There are numerous risk factors, both modifiable and nonmodifiable, for the development of colorectal cancer, and family physicians need to discuss these risk factors with their patients when developing a plan for screening.

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 Print ISSN: 1877-573X doi: 10.33181/160201

The authors have no conflicts of interest or financial disclosures.

MODIFIABLE RISK FACTORS FOR COLORECTAL CANCER

While genetic risk factors are nonmodifiable, numerous lifestyle choices have a dramatic impact on a person's risk of developing colorectal cancer. About 55% of all colorectal cancers in the United States can be attributed to lifestyle choices.[4] Current cigarette smoking carries a 59% increased risk of colorectal cancer. An elevated risk persists through 20 years' postcessation. Moderate alcohol consumption of 25 grams of ethanol per day increases colorectal cancer risk by 30%.[6] Obesity carries an increased risk of colorectal cancer in both men and women. Diets high in fats and processed meats, along with diets low in fiber, fruits, and vegetables, carry an increased risk of colorectal cancer. A sedentary lifestyle also carries an increased risk of colorectal cancer, but this can be lowered with increased activity.[4]

GENETIC RISK FACTORS FOR COLORECTAL CANCER

There are several genetic factors and chronic disease processes that carry an increased risk for the development of colorectal cancer, and each of these has slightly different recommendations for screening.

History of a first-degree relative with colorectal cancer carries a 2- to 4-fold increase in an individual's risk of developing colorectal cancer.[4] Surveillance screening with direct visualization should begin at age 40 years or 10 years before the family member's age at diagnosis.[7]

Inflammatory bowel disease is an independent risk factor for colorectal cancer, with patient risk increasing with the duration and severity of the disease. It is estimated that the colorectal cancer

risk 10 years after diagnosis is 2%, but it increases to 8% and 18% after 20 and 30 years' postdiagnosis, respectively. Screening by direct visualization is recommended beginning 8 to10 years after initial diagnosis and is continued every 1 to 2 years.[8]

Familial adenomatous polyposis (FAP) is an autosomal dominant disorder in which individuals develop hundreds to thousands of polyps, thus increasing the risk of early-onset colorectal cancer, typically by ages 30 to 40 years.[9] These individuals are also at risk of cancers of the stomach, small intestine, pancreas, bile duct, liver, adrenal gland, thyroid, and brain. Direct visualization is the recommended screening, starting at ages 10 to 12 years and repeating every 1 to 2 years.[7]

Lynch syndrome, also known as hereditary nonpolyposis colorectal cancer, is an inherited disorder in which gene mutations primarily increase the risk of colorectal, endometrial, and ovarian cancers. These gene mutations also increase the risk of brain, urinary tract, stomach, small intestine, pancreas, and bile duct cancers. For patients with Lynch syndrome, colorectal screening via direct visualization is recommended starting at the ages of 20 to 25 years or 2 to 5 years earlier than the age of the youngest family member diagnosed with colorectal cancer and repeating every 1 to 2 years. This condition is estimated to affect between 1 in 280 to 440 individuals and accounts for approximately 3% of colorectal cancers.[10]

SCREENING MODALITIES FOR COLORECTAL CANCER

Early detection through screening is important in preventing the development of advanced life-threatening colorectal cancer. Family physicians play a vital role in health maintenance screenings. Numerous factors impact patient compliance with colorectal cancer screening, including anesthesia risks, the necessity for bowel prep, and confusion with the available screening modalities. Many patients are unaware that the recommended age for colorectal cancer screening has been lowered from 50 to 45 years in recent years. Many are averse to aspects of colonoscopy screening and are unaware of alternative options. Frequently, patients do not see the need for screening if they are asymptomatic and have no family history. Other times, patients fail screening due to fear of the cost and effort (time off work, procuring a driver, expense of the bowel prep). Some simply fail to have screening performed due to procrastination.[11]

The USPSTF recommends grade A for colorectal screening in patients ages 50 to 75 years, grade B for patients ages 45 to 49 years, and grade C for ages 76 to 85 years.[12] Multiple screening modalities are available. Family physicians must explain the risks, benefits, and individualized patient screening options based on their personal and family history.

A colonoscopy is an endoscopy procedure that visualizes the rectum, colon, and part of the ileum. This is the most comprehensive colorectal screening modality; therefore, it is performed under anesthesia after bowel preparation. It is recommended every 10 years by the USPSTF if the results are benign.[5]

Sigmoidoscopy utilizes a scope to visualize the rectum, sigmoid colon, and descending colon. Thus, only left-sided polyps can be identified and removed. Patients do have to undergo bowel prep; however, screening can be performed in an office setting without anesthesia. This screening modality is limited to the left hemicolon, thus the USPSTF recommends screening every 5 years if screening is negative.[5]

Computed tomography (CT) colonography uses CT imaging to evaluate for polyps in the colon or rectum. Bowel prep is required before imaging. CT colonography is recommended every 5 years by the USPSTF when results are benign. While CT colonography is considered a direct visualization modality, only the colonoscopy and sigmoidoscopy allow for polypectomy at the time of evaluation.[5]

Stool-based tests allow patients to collect a stool sample at home and return it for processing at a laboratory facility. Fecal Immunochemical test (FIT) analyzes a stool sample for traces of blood. For this modality, the USPSTF recommends yearly screening. Multitarget stool DNA with FIT additionally analyzes the sample for DNA mutations using molecular assays to assess for biomarkers of any colorectal neoplasia. The USPSTF recommends this testing modality every 3 years, at minimum.[5]

It is important to note that an abnormal stool-based test or CT colonography necessitates a colonoscopy for further evaluation.

SYMPTOMS OF COLORECTAL CANCER

While the purpose of colorectal cancer screening is for early detection and treatment of localized disease, it is essential to discuss the common signs and symptoms of colorectal cancer. Bowel habit changes include new-onset constipation or diarrhea, "pencil thin" stools, bright red blood per rectum, or black, tarry stools. Patients may also report the sensation of incomplete bowel emptying with defecation, abdominal pain, or cramping. Unintended weight loss or changes in appetite without a clear etiology may also be present.[13]

STAGING OF COLORECTAL CANCER

When colorectal cancer is detected, it is important to obtain staging of the disease, as treatments will be guided by the stage present at diagnosis.

- **Stage 0** is carcinoma in situ, localized to the colonic mucosa.
- **Stage I and Stage II** involve cancers that have grown into or through the wall of the colon/isolated surrounding tissues but not to surrounding lymph nodes.
- **Stage III** involves cancers that have spread to nearby lymph nodes but not other parts of the body.
- **Stage IV** is advanced colorectal cancer involving the spread to distant organs outside of the colon. Frequent sites of metastases include the liver, lungs, brain, or peritoneum.[13]

TREATMENT OF COLORECTAL CANCER

Treatment of colorectal cancer varies depending on stage at diagnosis, location, patient age, patient preference, and genetic factors. Standard treatment includes removing or destroying lesions via surgery, radiofrequency ablation, or cryosurgery. Chemotherapy, radiation, targeted therapy, and immunotherapy are frequently employed adjunctive therapies. It is important to discuss with patients that surgical intervention may result in

- **Stage 0:** Local excision/polypectomy and/or resection/anastomosis
- **Stage I and Stage II:** Mainstay is resection and anastomosis with case-dependent adjuvant chemotherapy
- **Stage III:** Resection and anastomosis combined with chemotherapy regimens
- **Stage IV:** Local excision of associated tumors with colon resection is typically recommended and may involve surgery to resect metastatic lesions. This stage typically includes chemotherapy before, during, and/or after surgery. For those who cannot undergo surgery, radiofrequency ablation or cryotherapy may be an option. Case-dependent protocols may include radiation, chemotherapy, targeted therapy, immunotherapy, and clinical trials

Family physicians should assist patients in navigating the various treatment options established by their oncology team. Chemotherapy regimens often come with numerous unintended systemic side effects, which may necessitate co-management by their family physician. Side effects may include nausea/vomiting, diarrhea, mucositis, fatigue, peripheral neuropathy, and immunosuppression. Effective management of these side effects is a primary factor contributing to a patient's ability to tolerate and continue treatment. Targeted therapies have been developed to avoid systemic side effects and offer a more direct approach to treatment. These therapies typically involve monoclonal antibodies, angiogenesis inhibitors, and protein kinase inhibitor therapies. Immunotherapy is a biologic therapy that utilizes immune checkpoint inhibitor therapy to enhance the body's ability to target and kill cancer cells. Thus, it is often used in the setting of metastatic disease.[14,15]

OSTEOPATHIC CONSIDERATIONS

With training in whole-patient care and a focus on the body, mind, and spirit connection, osteopathic family physicians are poised to educate patients on the importance of colorectal cancer screening while helping each patient decide which screening method is best for their health and wellness goals. Since many of the risk factors for colorectal cancer are modifiable, family physicians can look to the five osteopathic treatment models for guidance in helping patients navigate these decisions. The metabolic-energetic model can address risk reduction strategies that target dietary and physical activity changes. The behavioral-biopsychosocial model can be employed to address some of the harmful lifestyle choices, such as cigarette smoking and excessive alcohol consumption, that increase colorectal cancer risks. It can also address some barriers to screening, such as social support, misconceptions or fear about the screening process, and time constraints of the screening modality employed.[16,1]

CONCLUSION

Since colorectal cancer is the third leading cause of cancer death in the United States among both men and women, early detection through screening is vital to preventing the development of advanced life-threatening disease.[1] While there are some genetic risk factors for the development of colorectal cancer, most risk factors are related to lifestyle. Family physicians play an integral role in educating their patients in ways to minimize these risks. In addition, family physicians must educate their patients on the available screening modalities, risks and benefits of each, and appropriate clinical indications for each test based upon each individualized patient's risk factors.

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BRIEF REPORT

CONSIDERATIONS FOR AN OSTEOPATHIC APPROACH TO RHEUMATOID ARTHRITIS

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KEYWORDS

Osteopathic manipulative medicine

Rheumatoid arthritis

ABSTRACT

Rheumatoid arthritis (RA) is a chronic autoimmune disorder that primarily affects the joints. The condition causes inflammation, pain, stiffness, and sometimes deformity in the affected joints. RA can also affect other parts of the body, including the lungs, heart, and eyes, and it can lead to long-term disability if left untreated. By this report, we aim to: (1) evaluate the effectiveness of osteopathic manipulative medicine (OMM) as a treatment option for RA, with a focus on the patient's symptoms and overall quality of life, and (2) identify best practices for incorporating OMM into a larger treatment plan for RA. We present a vignette case of a 56-year-old female patient with a diagnosis of RA treated with OMM. While awaiting hydroxychloroquine clearance, the patient was treated with radiocarpal extension dysfunction (postisometric relaxation), counterstrain of the dorsal wrist, and high velocity, low amplitude (HVLA) of the posterior radial head dysfunction with a supination emphasis. On follow-up, the patient noticed significant relief of her symptoms after treatment and reported that her pain level had diminished to 0/10. This report highlights the effectiveness of OMM in treating RA symptoms. The patient's follow-up information supports the initial improvement in symptoms and suggests that OMM may reduce wrist pain in a patient with RA a few weeks posttreatment. Further studies should be evaluated to see the effectiveness of OMM techniques for RA across an entire patient population.

INTRODUCTION

Rheumatoid arthritis (RA) is a chronic progressive autoimmune disorder characterized by inflammation, pain, and stiffness in the joints and other body parts. RA affects 1.3 million adults in the United States.[1,12] It is a multisystemic disease that can lead to joint destruction, disability, and reduced quality of life if left untreated.1 RA is the most commonly diagnosed systemic inflammatory arthritis with a multifactorial etiology. There is a genetic susceptibility to RA with genetic associations, including human leukocyte antigens DR4 and DRB1.[1] Risk factors include older age, family history of RA, smoking, and female sex.[1] The pathogenesis of RA is not fully understood but it is thought to involve a combination of genetic and environmental factors. With RA, the immune system mistakenly attacks the synovial membrane of the joints, leading to inflammation and pannus formation. This leads to erosion of the cartilage and bone, resulting in joint destruction and loss of function.

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 Print ISSN: 1877-573X doi: 10.33181/160204

The authors have no conflicts of interest or financial disclosures.

The traditional treatment options for RA include nonsteroidal anti-inflammatory drugs (NSAIDs) to alleviate symptoms, and disease-modifying antirheumatic drugs (DMARDs) to slow progression of the disease.[1] DMARDs include methotrexate,[1] which is considered first-line treatment, hydroxychloroquine,[1] sulfasalazine,[2] and biologic agents such as tumor necrosis factor (TNF)-alpha inhibitors (eg, etanercept, adalimumab, infliximab) or interleukin (IL)-6 inhibitors (eg, tocilizumab).[3] These medications are effective in controlling inflammation and slowing progression of the disease; however, they can be associated with significant side effects, such as liver damage in the case of methotrexate[4] and cardiotoxic cardiomyopathy in the case of hydroxychloroquine.[5] In addition, some patients may not respond adequately to them. Active interventions, which involve guided exercises performed by the patient, play a crucial role in maintaining joint function and enhancing quality of life. These exercises are typically recommended as a part of a multifaceted treatment strategy, aiming to complement pharmacologic interventions and address the physical aspects of RA.

In recent years, there has been a growing interest in utilizing osteopathic manipulative medicine (OMM) as an adjunctive approach to managing RA. Nevertheless, it is crucial to note that the current body of literature evaluating effectiveness of OMM in RA is limited.[8] This deficiency underscores the necessity for further deliberation and empirical investigation through clinical

trials to ascertain the potential utility of OMM in treating RA. While the biologic cause of RA is not yet fully understood, OMM aims to leverage the body's inherent capacity for self-regulation and healing. OMM involves physiologic processes such as lymphatic mobilization, which enhances circulation and potentially reduces inflammation by facilitating the removal of inflammatory mediators. It may also induce the expression of anti-inflammatory cytokines like IL-10, modulating the immune response and possibly decreasing autoimmune attacks on synovial membranes.

Additionally, OMM might influence hydration of the connective tissue matrix, which is crucial for maintaining its biomechanical properties and proper cell function, thus managing the stiffness and discomfort associated with RA.[6] Although these mechanisms offer a plausible theoretical framework, the precise ways in which OMM/OMT (osteopathic manipulative treatment) affect RA are not fully elucidated, and more research is needed to confirm their relevance and efficacy in the context of RA—especially given the disease's complexity and the individualized approach of OMM/OMT. OMM includes many techniques that can be used to improve pain and signs of acute inflammation, such as limited range of motion (ROM) and muscle hypertonicity, and it has been useful in the treatment of osteoarthritis (OA).[12] This study investigated use of OMM in the management of RA and found that OMM can address the pain of arthritis, which may result from edema, muscle spasm, or reduced mobility.[8]

This report presents the case of a 56-year-old female patient with RA who was treated with OMM. The patient's case highlights the potential benefits of OMM in the management of RA, particularly in cases where traditional pharmacologic treatment options are not suitable or are declined by the patient. This case also highlights the importance of considering a patient's medical history, symptoms, and preferences while planning treatment. The purpose of this report is to present a specific case of a patient with RA treated with OMM techniques. The report aims to describe the patient's presentation, diagnosis, treatment, and outcome to highlight potential benefits and address gaps in the literature on use of OMM in management of RA.

PATIENT INFORMATION

A 56-year-old female presented with right wrist and finger pain, along with associated numbness, stiffness, and decreased ROM in the associated right wrist and fingers. The pain was usually 4/10 but had recently flared to 9/10. The patient has a past history of OA in both feet, hips, and lumbar spine. She was evaluated by rheumatology and was diagnosed with RA. She was offered methotrexate but declined due to its side effect profile. The patient was then offered Plaquenil (hydroxychloroquine) but is waiting for clearance from a cardiologist before beginning that medication.

The patient's prior medical history includes obesity, hypertension, RA, OA (both feet, hips, lower back), and myocardial infarction (MI) in 2019. Her prior surgical history includes stent procedure (2019), cholecystectomy (2000), C-section (1995, 1998), and hernia repair and abdominoplasty (2002). With regard to family history, the patient's mother's medical history is significant for psoriatic arthritis.

Clinical Findings

The patient is currently taking metoprolol 25 mg daily, valsartan-hydrochlorothiazide 160/25, aspirin 81 mg daily, a multivitamin, alpha-lipoic acid, vitamin B6, and vitamin D. She has allergies to sucralose, morphine, and Demerol. The patient's past medical laboratory results are included below in Tables 1 and 2, covering previous blood work and X-ray results.

On review of systems, the patient reported no general symptoms such as fevers, chills, fatigue, or weakness. She reported no chest pain, palpitations, or lightheadedness. Further review of systems was negative for shortness of breath, cough, wheezing, or sputum production. A gastrointestinal review of systems was negative for nausea, vomiting, diarrhea, and constipation. The genitourinary review of systems was negative; no dysuria, hematuria, or incontinence was observed. The musculoskeletal review of systems was negative, showing positive joint stiffness (in the right wrist and hand) and negative joint swelling.

The patient was alert and oriented x3 on physical examination, with mild distress due to pain. Cardiovascular examination revealed regular rhythm, +S1/S2, no rubs/murmurs/gallops. Pulmonary examination revealed clear lungs on auscultation bilaterally (CTA B/L), no wheeze/rales/rhonchi. Gastrointestinal examination showed normal bowel sounds x4, nontender to palpation, and no hepatosplenomegaly. Musculoskeletal examination showed 5/5 right wrist muscle strength with extension eliciting pain and diminished ROM of right wrist and hand. Neurologic examination showed cranial nerves 1 to 12 were intact.

Osteopathic Examination

On osteopathic structural examination, the patient had OA FSRRL at C3 NSRRR, T4-7 SRRL, L2-4 SLRR, ribs 4 to 6 inhalation dysfunction on the left, right anterior innominate dysfunction, left on left somatic dysfunction, posterior radial head on the right, right wrist extension somatic dysfunction, and posterior tibial on talus. Based on the patient's history, symptoms, examination findings, and imaging studies, a diagnosis of RA was made.

Therapeutic Intervention

The patient was offered Plaquenil (hydroxychloroquine) as a treatment option but is waiting for clearance from a cardiologist before beginning the medication. During this time, the patient was treated with radiocarpal extension dysfunction (postisometric relaxation), counterstrain of the dorsal wrist, and high velocity, low amplitude (HVLA) of the posterior radial head dysfunction with a supination emphasis.[10] The patient was then shown home exercises to perform daily to improve her ROM and wrist strength, including wrist curls, wrist rotations, and wrist extensions/flexions.

Follow-up and Outcomes

On 2-week follow-up, the patient noticed significant relief of wrist and hand symptoms after treatment and reported that her pain level had diminished to 0/10. Additionally, a few weeks later, she noted prolonged relief of symptoms in the time since. The patient will continue to be followed up with rheumatology and OMM for further management of her RA.

TABLE 1:

Labs (7/2021)

Immunoglobulin (Ig) G	1017
IgA	241
IgM	209
Total protein	7.0
Albumin	3.5
Alpha-1-globulin	0.3
Alpha-2-globulin	1.0
Beta-globulin	1.0
Gamma-globulin	1.1
M-spike	Not observed
Total globulin	3.5
Rheumatoid factor	26.3 high (repeat 29)
Anti-dsDNA antibodies	1
CCP antibodies	8
Sedimentation rate	56 (high)
Sjogren's	Anti SS-A <0.2, anti SS-B <0.2
Saccharomyces cerevisiae	IgG and IgA <20

TABLE 2:

Prior Imaging

X-ray of the hip (8/2022)	Right hip degenerative change at acetabulum
X-ray of the lumbar spine (8/2020)	Multilevel lumbar degenerative disc disease and spondylosis
X-ray of the feet (1/2022)	Degenerative OA in B/L feet

DISCUSSION

RA is a systemic chronic autoimmune condition that causes inflammation, pain, and stiffness in the joints and other areas of the body. This 56-year-old female patient presented with right wrist and finger pain, along with associated numbness, stiffness, and decreased ROM in the associated right wrist and fingers. The patient has a past history of OA in both feet, hips, and lumbar spine. She was evaluated by rheumatology for RA and was offered methotrexate, but it was declined due to its side effect profile. The patient was then offered Plaquenil (hydroxychloroquine) but is waiting for clearance from a cardiologist before beginning the medication.

The patient's management course involved a combination of traditional pharmacologic treatment options and OMM techniques. Methotrexate, a common first-line treatment for RA, was declined by the patient due to its potential side effects, which can include liver damage, lung infections, and an increased risk of certain types of cancer. Plaquenil, another treatment option, was also declined by the patient, who is awaiting clearance from a cardiologist before starting the medication. During this time, the patient was treated with OMM techniques such as radiocarpal extension dysfunction (postisometric relaxation), counterstrain of the dorsal wrist, and HVLA of the posterior radial head dysfunction with a supination emphasis.[10] After treatment, the patient reported significant relief of wrist and hand symptoms, and her pain level had diminished to 0/10. Additionally, a few weeks later, the patient noted prolonged relief of symptoms in the time since.

The significance of this case lies in the fact that it highlights the potential benefits of OMM techniques in the management of RA, particularly in cases where traditional pharmacologic treatment options are not suitable or are declined by the patient. It is also important to note that OMM can be utilized as a medium for reducing reliance on and, therefore, side effects of pharmacologic treatments of RA. Methotrexate, the first-line agent for RA, can result in severe side effects, including myelosuppression, hematotoxicity, nephrotoxicity, and pulmonary fibrosis, among others. If paired with its second-line agent, infliximab, patients can experience immunosuppression, putting them at alarming risk for infection. Additionally, it is worth noting that the patient's past medical history, including MI and hypertension, may have played a role in the decision to decline certain treatment options.

While this case shares similarities with previous research on use of OMM in the management of RA, the patient's past medical history, the specific OMM techniques used, and the patient's decision to decline certain medications makes it unique and adds to the current understanding of management of RA. However, it is important to note that OMM is not a cure for RA, and patients will need to continue to be followed up with rheumatology and OMM for further management of their condition.

PATIENT PERSPECTIVE

This report presents the perspective of a patient who was treated with OMM for her RA. The patient's perspective is an important aspect of this report, as it provides insight into the patient's rationale and emotional and physical experience.

This patient's perspective is presented through their own words, gathered during an interview conducted as part of the report research process. By including the patient's perspective in this report, we hope to provide a more comprehensive understanding of the impact of OMM treatment on patients and the importance of a patient-centered approach to care.

The patient stated:

> "As a healthcare professional, I had a good understanding of the side effects and risks associated with traditional RA medications, and I knew that I wanted to explore other options before settling on a medication regimen. As an oncology nurse, I've seen methotrexate used for cancer patients numerous times and have seen a wide range of both the positive effects and adverse effects of the medication. Plaquenil was another medication offered for the management of my condition. Still, after having a recent heart attack, I was waiting to hear from my cardiologist before starting any medications that could potentially be cardiotoxic. I had heard from friends that OMM really helped them with their joint pain from OA and other conditions. I found an OMM practitioner who was comfortable in treating RA patients and started regular sessions. The results were nothing short of amazing. Within a few weeks of starting OMM treatment, I noticed a significant reduction in joint pain and stiffness and an improvement in my ROM. The OMM practitioner worked with me to identify areas of tension and stiffness in my body and target those areas with specific techniques to alleviate discomfort. One of the things I appreciated most about OMM was that it focused on treating the whole person, not just the disease. My practitioner took the time to listen to my concerns, and we worked together to develop a treatment plan that addressed my specific needs and lifestyle. My experience with OMM has given me a new perspective on the power of integrative medicine. I am grateful to have found a treatment option that has allowed me to manage my RA without relying on medication, and I am eager to share my experience with others who may be struggling with similar conditions."

INFORMED CONSENT

In accordance with ethical and legal standards, informed consent was obtained from the patient prior to any procedures, treatments, or interventions. The patient was fully informed of the risks, benefits, and alternatives of the proposed treatment plan and had the opportunity to ask questions and clarify any concerns before providing their consent. The informed consent process was documented in the patient's medical record. In addition to obtaining informed consent for any procedures, treatments, or interventions, the patient was fully informed of the report's purpose, potential risks, and benefits. The patient provided written consent to allow their medical information to be used for educational or research purposes, including publishing a report. The patient had the opportunity to review the report and provide any input or feedback before giving their final consent. The process of obtaining informed consent for the report writing was also documented in the patient's medical record.

CONCLUSIONS

This report highlights the potential advantages of OMM techniques in the treatment of RA, mainly when more conventional pharmaceutical options are ineffective or the patient declines them. The patient's prior medical history, which included MI and hypertension, may have influenced the choice to forego some treatment possibilities. More research is required to assess OMM's efficacy in the treatment of RA and to pinpoint the patient populations who will benefit from this therapeutic strategy.

Informed consent: Before participating in this study, the patient provided written informed consent. Nicholas Averell obtained paper consent from the patient to write and publish the report.

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CLINICAL IMAGE

RARE SKIN LESION ON A NEWBORN

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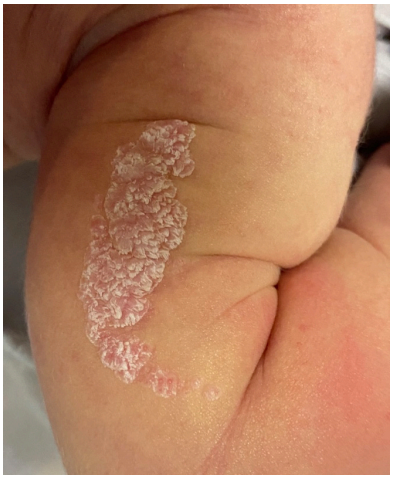
CASE REPORT

A newborn female was evaluated in the well-baby nursery after she was born full term at 39 weeks' gestation via C-section to a 37-year-old G2P2 mother. There was no history of sexually transmitted infections during pregnancy or genital lesions prior to delivery. However, the delivery was complicated by maternal positive Group B streptococcal (GBS) status, for which the mother received one dose of cefazolin before delivery. The newborn patient was found to have hyperbilirubinemia and was admitted to the hospital for 2 days for phototherapy treatment. Her newborn exam was unremarkable except for jaundice and a linear, silvery-white, scaly lesion to the left upper extremity (Figure 1). The family history was negative for dermatologic conditions. The baby was otherwise asymptomatic with appropriate feeding and bowel movements. Her stay was uneventful, and she was discharged without complication.

FIGURE 1:

During the newborn's physical exam, raised silvery-white skin plaque was found on the left upper arm.



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 Print ISSN: 1877-573X doi: 10.33181/160205

The authors have no conflicts of interest or financial disclosures.

This lesion was followed at the patient's subsequent 2-month well-child check and is depicted in Figure 2, with gradual changes noted in the lesion. Figure 3 shows the continuation of hyperpigmentation and verrucous transformation of the skin lesion at the 4-month well-child check. The patient was referred to dermatology for a definitive diagnosis and discussion of potential treatment options.

FIGURE 2:

The left upper arm skin lesion appears at the 2-month well-child check with progressive lesion hyperpigmentation and verrucous characterization.

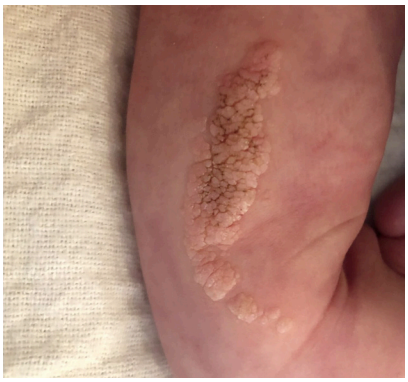
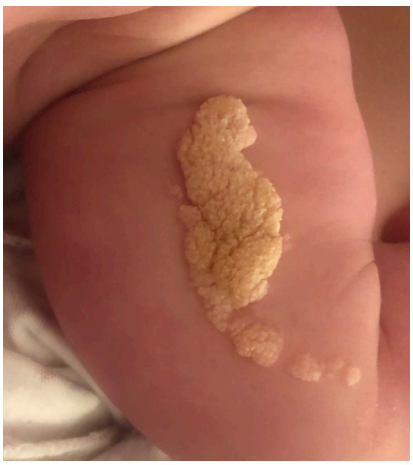


FIGURE 3:

Further evolution of the skin lesion was seen at the 4-month well-child check with deepening hyperpigmentation and verrucous transformation. A dermatology referral was made at this visit.



QUESTIONS

1. What is the most likely diagnosis?

a. Linear psoriasis

b. Epidermal nevus

c. Lichen planus

d. Lichen striatus

e. Linear porokeratosis

Correct answer:
b. Epidermal nevus

Linear verrucous epidermal nevus (LVEN) is a benign dermatologic skin lesion that is well-demarcated from surrounding skin and has a verrucous or wart-like appearance. The lesion may appear skin-colored early in development but gradually darkens over time. The lesion may grow and plateau around the time of adolescence. The distribution of lesions varies from solitary papules to multiple plaques.

Differential diagnoses of epidermal nevus include linear psoriasis, lichen planus, lichen striatus, and linear porokeratosis, which all typically follow the same distribution but have different appearances. Psoriatic lesions are more common in adults and have an erythematous base with an overlying silver scale. Lichen planus lesions present as violaceous flat-topped papules. Lichen striatus lesions are triggered by infection, trauma, or other environmental causes. They are pink or dull red scales that last a few weeks to months before resolving spontaneously without any residual complications. Lesions of linear porokeratosis are red and have a raised edge with a furrow or atrophic center. Observation of this newborn's lesion over several months allowed for eliminating many of the differential diagnoses and was most consistent with the presentation of a LVEN. upper abdomen, a 1.1-cm perirenal nodule was also appreciated.

In light of these findings, hematology-oncology specialists and infectious disease specialists were consulted, and a nodule biopsy was obtained from the patient's right shoulder by interventional radiology.

2. Aside from the integumentary system, what other body systems may be involved with this diagnosis?

a. Nervous

b. Vascular

c. Musculoskeletal

d. All of the above

e. None of the above

Correct answer:
d. All of the above

Epidermal nevi result from mutations in genes responsible for epidermal cell growth and development. The earlier these mutations occur, the more extensive the disease may be and the more body systems affected. Some examples of extensive systemic involvement include epidermal nevus syndrome (ENS); congenital hemidysplasia with ichthyosiform erythroderma and limb defects (CHILD) syndrome; and congenital lipomatous overgrowths, vascular malformations, epidermal nevi, and scoliosis/skeletal/spinal anomalies (CLOVES) syndrome. Clinical manifestations of these syndromes include seizures, developmental delay, hemiparesis, cranial nerve palsies, deafness, cataracts, scoliosis, ipsilateral hypoplasia of limbs, unilateral alopecia, severe nail dystrophy, Wilms tumor, vascular malformations, scoliosis, spina bifida, macrodactyly, and sandal gap deformity.[2,3] Identifying epidermal nevi is important because they can be associated with abnormalities in one or more different organ systems in 33% of patients.[4]

DISCUSSION

LVEN are rare skin findings in one to three out of 1000 people.[2] They are thought to occur due to sporadic postzygotic mutations leading to mosaicism in genes associated with skin cell growth, differentiation, and division. Some commonly affected genes include fibroblast growth factor receptor (FGFR3), phosphatidylinositol 3 kinase (PI3K), and RAS oncogenes, specifically HRAS.[2,3] Furthermore, timing of the mutation also plays a role in the severity of the condition. The earlier during embryologic development the mutation occurs, the more likely the nevus is to be associated with extensive systemic involvement.[2,3,6]

Classically, an LVEN is linear in configuration and develops along the lines of Blaschko, representing lines of normal skin development and migration, which become evident in those with mosaic skin conditions. It is most commonly seen at birth or in early childhood. The lesions are often found unilaterally on the trunk or extremities, although they can develop on the head, neck, or oral cavity. The nevi themselves are raised and may initially be pink but will often darken to a brown color with time. Occasionally, they may be associated with pruritus or tenderness.[4]

LVEN diagnosis is usually made clinically based on the presentation and appearance of the lesion. However, it can be confirmed definitively via histopathology, which shows marked hyperkeratosis, acanthosis, and papillomatosis of the epidermis.[2]

There is no single recommendation regarding treatment for LVEN, as treatment regimens will depend on the lesions specifically. Surgical excision may be considered for smaller lesions due to lower risks for recurrence and scarring. Larger lesions are more difficult to treat due to scarring risks with surgical excision and varying responses to laser ablation, topical therapies, and light therapy.[5]

Early diagnosis, treatment, and intervention are crucial to supporting patients with LVEN. In rare instances, lesions can undergo malignant transformation to basal or squamous cell carcinoma. Identifying these lesions and investigating the specific

associated syndromes can guide treatment plans and referrals to include ophthalmology, neurology, and possibly plastic surgery for surgical excision of the lesion, depending on the extensiveness and location of the lesion.

SUMMARY

In this case, epidermal nevus was diagnosed clinically based on its resemblance to characteristic LVEN lesion presentation and progression. Before diagnosis by dermatology, the parents reported the plaque was erythematous and inflamed but noted that they had been applying coconut oil as a moisturizer, which seemed to help with inflammation. Therapeutic options were discussed with the parents, including surgical excision, laser ablation, and topical therapies. After much deliberation, the parents decided to conduct a clinical observation of the lesion for now. They would consider a referral to plastic surgery for laser resurfacing at a later age. The parents were advised to continue moisturization with coconut oil and to arrange a follow-up appointment if the skin lesion worsens. The patient has tolerated this supportive therapy thus far and continues to do well.

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PATIENT EDUCATION HANDOUT

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Cervical Cancer Screening

Hannah Noel Flynn, BS, OMS-II; Jordan Winebrenner, BS, OMS-II

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WHAT IS PAP SMEAR SCREENING FOR?

The Papanicolaou test, otherwise known as a "Pap test" or "Pap smear," is used to screen for cervical cancer.

WHY IS IT IMPORTANT TO SCREEN FOR CERVICAL CANCER?

Cervical cancer claims the lives of over 4000 women annually in the United States. Up to 93% of cervical cancers can be prevented through Pap smear screening and HPV vaccination. Finding cervical cancer early can greatly improve a patient's chances of survival.

CERVICAL CANCER RISK FACTORS

- High-risk human papillomavirus virus (HPV) infection
- Immunocompromised state
- Previous diagnosis of high-grade precancerous lesion or cervical cancer
- In utero exposure to diethylstilbestrol
- Human immunodeficiency virus (HIV) infection

WHAT IS THE DIFFERENCE BETWEEN A PELVIC EXAM AND A PAP SMEAR?

Pelvic exams are part of a routine physical exam for women and can be utilized during yearly physicals, pregnancy, exploring pelvic pain, and evaluating signs of infection. During the procedure, an instrument called a speculum will be inserted into the vagina to help the provider visualize the vaginal wall and cervix. At this time, the provider may perform a Pap smear. This procedure uses a brush or spatula to sample cervical cells. Pap smears are used to screen for cervical cancer by inspecting the collected cells with a microscope.

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PATIENT EDUCATION HANDOUT

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Cervical Cancer Screening

HOW OFTEN SHOULD YOU RECEIVE SCREENING?

According to the guidelines from the American Society for Colposcopy and Cervical Pathology (ASCCP) and the American College of Obstetricians and Gynecologists (ACOG), it is recommended that women start having Pap smears every 3 years, beginning at 21 years of age. After age 30 years, it is suggested that women undergo co-testing, which involves both HPV DNA testing and a Pap smear, every 5 years. However, women who are 65 years and older, or who have previously had a total hysterectomy, may not need to be screened for cervical cancer, if they have had negative screening results in the last 10 years and have not been diagnosed with moderate cervical changes in the past 25 years. It is important to discuss these options with your healthcare provider.

WHAT CAN YOU EXPECT?

Cervical cancer screening is typically a brief procedure, lasting only a few minutes. The provider will gently insert a speculum into the vagina to obtain a small sample of cells from the cervix using a soft brush or spatula. The sample is then sent to a laboratory to detect any abnormal cells and strains of HPV that may lead to cancer. Medical practitioners will usually provide clear and detailed explanations of each exam step. A Pap smear may be uncomfortable, but it should not be painful. Light bleeding after the procedure is normal, but if you experience discomfort lasting more than a few minutes or bleeding that lasts longer than 24 hours, inform your healthcare provider.

HPV VACCINATION

Gardasil 9, an HPV vaccine, can be administered to both boys and girls. It is highly effective in preventing most cases of cervical cancer, vaginal and vulvar cancer, genital warts, anal cancers, and mouth, throat, head, and neck cancers. Studies suggest that vaccinating boys against HPV may reduce transmission to girls. The vaccine is recommended for individuals ages 9 to 45 years and is most effective when administered before exposure to the virus through sexual contact. Research has demonstrated that receiving the vaccine at a young age is not associated with an earlier start of sexual activity.

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Colorectal Cancer Screening Recommendations

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WHAT IS COLORECTAL CANCER?

Colorectal cancer is a form of cancer that affects the colon and/or rectum. Early detection of this cancer can be challenging as it does not typically present with apparent symptoms during the initial stages.[1] Fortunately, screening tests for colorectal cancer can identify cancer in its early stages and lead to better treatment outcomes. In advanced stages of colorectal cancer, noticeable symptoms can include:

- Changes in the shape, color, or consistency of stool or changes in bowel habits that last longer than a few days
- Bleeding when wiping or blood in the stool
- Discomfort or cramping in the abdomen
- Unintentional weight loss
- Weakness or fatigue
- Persistent urges to have a bowel movement, even after using the restroom

HOW CAN TALKING ABOUT YOUR BOWEL MOVEMENTS SAVE YOUR LIFE?

Colorectal cancer is the third most common cause of cancer-related deaths.[2] Unfortunately, it can feel uncomfortable discussing your bowel movements with your physician, resulting in delayed diagnosis and treatment of colorectal cancer. Delays in treatment can lead to the advancement of cancer, decreased effectiveness of treatments, and lower chances of survival.

WHEN SHOULD I START MY SCREENING?

Due to an increased rate of colorectal cancer in younger adults,[3] new screening guidelines recommend beginning at age 45 years and continuing until age 75 years.[1] How often you get screened depends on many factors you can discuss with your physician. Talk with your physician about whether you have certain risk factors that may require you to begin screening earlier.[4] These include[4]:

- Previous diagnosis of colon polyps or colorectal cancer
- History of inflammatory bowel diseases (ulcerative colitis or Crohn's disease)
- Previous exposure to radiation of the abdomen or pelvic area
- Family history of colorectal cancer
- African American or American Indian ancestry[2]

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Colorectal Cancer Screening Recommendations

HOW DOES SCREENING WORK?

Your first step should be to talk with your physician. Do not feel embarrassed or hesitant to discuss your bowel movements; this information is critical to understanding your health. There are several different methods of colorectal cancer screening, and each method has its own set of risks and benefits. Your physician will help determine which screening method is right for you. The current leading screening methods are as follows[3, 4]:

- Colonoscopy/sigmoidoscopy: This procedure uses a camera to assess the inside of the colon for abnormalities while the patient is sedated
- Computed tomography (CT) colonography: A noninvasive procedure that uses CT imaging to view the colon from the outside
- Stool tests: A laboratory test that analyzes the stool for signs of cancer

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Recognize EXCELLENCE in the Profession

2024

The American College of Osteopathic Family Physicians (ACOFP) and the ACOFP Board of Governors recognize the following exceptional members for their contributions to the organization and the osteopathic profession.

ACOFP OSTEOPATHIC FAMILY PHYSICIAN OF THE YEAR AWARD

The ACOFP Osteopathic Family Physician of the Year Award honors physicians who have made outstanding contributions to the osteopathic profession and local communities.

Kathleen M. Rollinger, DO, FACOFP

Dr. Kathleen Rollinger earned her bachelor's degree in mathematics from Wayne State University and received her Doctor of Osteopathic Medicine from Michigan State University. She completed an internship at Detroit Osteopathic/Bi-County Hospitals and residency at Bon Secours Hospital. Dr. Rollinger is a member of the faculty at Oakland University William Beaumont (OUWB) School of Medicine where she sees patients and teaches residents and medical students in the family medicine residency program. As a full spectrum family physician, she also provides prenatal care, delivers babies, and does hospital newborn care. Dr. Rollinger is an adjunct faculty at MSU-COM where she volunteers teaching MSU-COM medical students in the Global Health Medical Service Elective in Peru and Guatemala.

She is highly recognized, belonging to several local, state, and national osteopathic medical organizations, and was awarded MAOFP physician of the year in 2020 and Women of Excellence by MOA in 2019. She received her ACOFP Fellow designation in 2017. Dr. Rollinger was appointed by the Governor of Michigan to and currently serves on the LARA Board of Osteopathic Medicine, as well as the Blue Cross Blue Shield of MI Diversity Council.

ACOFP LIFETIME ACHIEVEMENT AWARD

The ACOFP Lifetime Achievement Award honors individuals for career-long service to their patients, osteopathic family medicine, and ACOFP.

Craig S. Boisvert, DO, FACOFP

Dr. Craig Boisvert earned his Doctor of Osteopathic Medicine from the University of New England College of Osteopathic Medicine and is currently Professor Emeritus at West Virginia School of Osteopathic Medicine, where he has held numerous professorships, dean appointments, and other roles. He is a noted advocate for osteopathic family medicine and was a mentor to generations of physicians during his storied 40-year career.

As an Osteopathic Health Policy Fellow, he is active in guiding healthcare legislation through the State of West Virginia and two years ago, he was inducted in the West Virginia Healthcare Hall of Fame. Further, Dr. Boisvert was awarded the Pioneer of Osteopathic Medicine from the University of New England. His accolades continue: He earned the ACOFP Fellowship Award in 1992 and has served the West Virginia state organization since 1989, first as a Delegate to the Congress of Delegates and then, as president-elect, president and immediate past president. He continued as a trustee until retiring last year. Dr. Boisvert was a practicing family medicine physician for nearly 30 years, until 2017, and served in more than 50 leadership and committee roles across several medical and health organizations.

ACOFP DIVERSITY, EQUITY, AND INCLUSION AWARD

The ACOFP Diversity, Equity and Inclusion Award (DEI) recognizes osteopathic family physicians who make significant contributions toward enhancing DEI within the profession, honoring those who have demonstrated behaviors or led initiatives that foster these principles within diverse and underrepresented communities.

Brianna Y. Clark, DO, MPH, CNPM, CLC

Dr. Brianna Clark earned several degrees in the sciences and public health, including a Master of Public Health from Texas A&M with a focus on rural communities and Doctor of Osteopathic Medicine from Edward Via College of Osteopathic Medicine. Recently, she became a certified lactation consultant through the International Board of Lactation Consultant Examiners (IBLCE) and completed the Climate Health Equity Fellowship (CHEF) through the Medical Consortium on Climate and Health. Dr. Clark currently participates in a fellowship on Lessons in Lactation Advanced Curriculum (LILAC) through the University of Rochester Medical Center and runs a public health education company called Sunflower Lactation and Health Education. She is active in many organizations, including ACOFP, NMA, and AMWA and is a noted advocate for racial, LGBTQIA+ and climate change policy change. Dr. Clark is an original member and current chair of the Diversity, Equity, and Inclusion (DEI) Advisory Group for ACOFP, where she and other early members established fifteen DEI recommendations that were adopted by ACOFP.

ACOFP DIVERSITY, EQUITY, AND INCLUSION AWARD

Rachel A. Nixon, DO

Dr. Rachel Nixon graduated from the Michigan State University College of Osteopathic Medicine in 2009 and is currently a family medicine physician practicing in Warren, Michigan. Over the last decade, Dr. Nixon served as Core Faculty, Associate Program Director, and now Program Director for the Family Medicine Program at Ascension Macomb Oakland Hospital, where she also completed her residency training. She has been actively engaged in MSUCOM's Statewide Campus System, ACOFP, MAOFP, AOA, WPATH, and GLMA in various capacities, including committee participation, conference presentations, and supporting resident involvement in local and national organizations. Dr. Nixon has become a fierce advocate for the LGBTQIA+ community in the last few years, with a great passion and drive to care for this patient population, practicing and teaching all aspects of LGBTQIA+ health and gender affirming care.

ACOFP EXCELLENCE IN ADVOCACY AWARD

The ACOFP Excellence in Advocacy Award recognizes physicians who have significantly contributed their time and expertise to national healthcare policy issues and is presented in honor of Marcelino J. Oliva Jr., DO, FACOFP *dist*.

Lorenzo L. Pence, DO, FACOFP, FAODME

Dr. Lorenzo Pence earned his Doctor of Osteopathic Medicine from the West Virginia School of Osteopathic Medicine and is currently Senior Vice President, Osteopathic Accreditation at the Accreditation Council for Graduate Medical Education (ACGME). His first practice was as a sole proprietor in rural Virginia. As Associate Dean Graduate Medical Education/MSOPTI Academic Officer, Dr. Pence developed new osteopathic training programs that included an accredited Teaching Health Center Family Medicine Program, which was funded by the US Department of Health Services Health Resources Administration. Recently, he led the transition toward a single accreditation system between ACGME, AOA, and AACOM. His additional experience includes being a member of the West Virginia Medical Professionals Health Program Board, board member of the Center for Rural Health Development, a Billings Fellow, and current president of the Institute of Medicine of Chicago (IOMC), in addition to his many professional association appointments and committee roles.

ACOFP OSTEOPATHIC FAMILY MEDICINE EDUCATOR OF THE YEAR AWARD

The ACOFP Osteopathic Family Medicine Educator of the Year Award was launched in 2010 and honors individuals who exemplify the osteopathic family medicine profession's highest standards of excellence in teaching and have made efforts towards the academic achievement of osteopathic students and residents.

Michael A. Becker, DO, MS, FACOFP

Dr. Michael Becker earned his Doctor of Osteopathic Medicine from the Philadelphia College of Osteopathic Medicine and is currently Associate Dean of Clinical Education and Professor of Family Medicine at PCOM. He oversees education for all third- and fourth-year students at PCOM. Dedicated to educating future physicians, Dr. Becker started teaching students in 1993. In 2001 he shifted to training family medicine residents, and then he became Program Director of the PCOM/ Mercy Suburban Family Medicine Residency Program. He returned to PCOM in 2009, and he became Vice Chair of the Family Medicine Department. He transitioned into administration in 2017. He received the 2024 PCOM Alumni Association Certificate of Honor in January. He is a member of several professional organizations including ACOFP and POFPS. He has lectured at AOA-OMED, ACOFP Intensive Board Reviews, ACOFP workshops, and other events. A former intern of Dr. Becker's and past educator of the year recipient praised Dr. Becker's passion, influencer, achievements, and unwavering commitment to educating future family medicine doctors.

ACOFP OUTSTANDING FEMALE LEADER OF THE YEAR AWARD

The ACOFP Outstanding Female Leader Award honors female physicians who serve as role models, teachers, leaders, and sources of inspiration for men and women alike.

Jennifer L. Gwilym, DO, FACOFP, FAAFP

Dr. Jennifer L. Gwilym received her Doctor of Osteopathic Medicine from Ohio University Heritage College of Osteopathic Medicine (OU-HCOM) in 2003. She completed the AOA Health Policy Fellowship, Residency Director Fellowship Program (RDFP), the Costin Leadership Institute Fellowship, and the Administrator Leadership Development Program (AACOM). She is an associate clinical professor of family medicine at OU-HCOM, where she also chairs the Department of Primary Care and student selection committee. In addition, Dr. Gwilym is Assistant Dean of Clinical Education for the university's southeast Ohio campuses. She has held numerous membership and leadership roles in several organizations. To name a few, she is the current health policy chair of the Ohio Osteopathic Association (OOA), past president of the OOA and Ohio ACOFP, a previously long-serving member of the AOA committee on Osteopathic College Accreditation and executive committee member and chair of the College Accreditation Training. She is currently a member of the AOA Board of Education. Dr. Gwilym currently serves as ACOFP CME Conference Advisory committee chair, the KLA Advisory committee liaison for CME Conference, and a member of the health and wellness committee.

ACOFP NEW OSTEOPATHIC PHYSICIAN OF THE YEAR AWARD

The ACOFP New Osteopathic Physician of the Year Award recognizes physicians who have made significant contributions to family medicine 2–5 years after entering the specialty.

Shirley L. Sharp, DO, FACOFP

Dr. Shirley Sharp is an assistant professor of Family Medicine at the Medical College of Georgia, Director of Osteopathic Education and Associate Program Director of the family and community medicine residency program. She graduated from GA-PCOM in 2014 and completed the family practice/emergency medicine combined program at Jefferson Northeast in Philadelphia. Dr. Sharp practiced emergency medicine during the COVID-19 pandemic and transitioned to family medicine as its urgency subsided. She is currently focused on clinical education and precepts residents in family medicine and medical students in overall patient care. A Hispanic physician from Colombia, Dr. Sharp values diversity and inclusion in medicine and volunteers as specialty chair for family medicine in the Latino Medical Student Association. She also works with the Women in Medicine Group at Augusta University to empower and mentor underrepresented groups. Dr. Sharp became involved with ACOFP in residency and volunteered in several conference planning committees, presented at several national events, and has been a table trainer at OMT bootcamp. She is currently a delegate from Georgia and worked with her state chapter to resume activities and is now member-at-large.

DISTINGUISHED SERVICE AWARDS

The ACOFP Distinguished Service Award honors individuals who demonstrate outstanding service to ACOFP through committee involvement or other activities that help achieve ACOFP's objectives.

Nicole H. Bixler, DO, MBA, FACOFP *dist*.

Dr. Bixler is a graduate of the Philadelphia College of Osteopathic Medicine and concurrently earned her MBA in Health Administration from St. Joseph's University. She currently practices at Immediate Medcare & Family Doctor in Spring Hill, Florida, where she focuses on geriatric outpatient and inpatient services using a value based care model. She is a Clinical Associate Professor at the Kiran Patel College of Osteopathic Medicine at NOVA Southeastern University and preceptor to students for rural family medicine, a role she's held since 2010. Additionally, she has been a part of the Core Teaching Faculty for inpatient services for the HCA Oak Hill Family Medicine Residency since its inception in 2017. Dr. Bixler has held numerous leadership positions on the state and national level including Florida Society ACOFP President, Florida Osteopathic Medical Association President, and President of ACOFP in 2020–2022.

During her tenure as ACOFP President-elect and President she helped navigate the organization's response to the COVID-19 pandemic, establish new DEI initiatives, and create the Leadership Development Committee. She currently serves on the ACOFP Executive Conclave of Fellows and will be serving on the ACOFP Foundation Board at the conclusion of her term on the Board of Governors. She is a newly appointed Director to the ACGME Board and is in her third term as a member of the Florida Prostate Cancer Advisory Council, an appointment made by the Governor. Dr. Bixler has been awarded numerous times for her service, including ACOFP Outstanding Young Physician of the Year,

ACOFP Outstanding Female Leader, the Florida Society of ACOFP Family Physician of the Year, the Florida Society of the ACOFP Educator of the Year, and a FOMA Distinguished Service Award. If asked, she will tell you her greatest achievement is being a positive role model to other female physicians and her three daughters.

Robert C. DeLuca, DO, FACOFP *dist*.

Dr. Robert DeLuca attended the University of Houston and received a degree in biology in 1974 and earned his MS from Texas Christian University in 1976. He then achieved a Doctor of Osteopathic Medicine from the Texas College of Osteopathic Medicine in 1984. A rural preceptor for over 37 years, Dr. DeLuca is an Associate Professor of Family Medicine at TCOM. He has also held several positions in ACOFP at the state level and nationally. He was president of the Texas ACOFP and served as program chair for their state convention; additionally, he has been program chair, site and convention chair, and member of the ACOFP board. Notably, Dr. DeLuca was president of ACOFP from 2019–2020.

He was awarded with the Texas ACOFP Family Physician of the year, TCOM Dean's award for outstanding alumnus, and the distinguished service award from Texas Osteopathic Medical Association. Dr. DeLuca previously received his distinguished Fellow award from ACOFP. Dr. DeLuca's wife, Valerie, is also an osteopathic internist and practices with Robert at their office in Eastland, Texas. His daughter Allison works in oncology research at Tempus in Chicago and his stepdaughter, Cydney, is completing her PhD in Neurobiology at Drexel Medical School.

Thomas N. Told, DO, FACOFP *dist*.

Dr. Thomas N. Told is entering his 50th year of being an osteopathic physician, with more than 30 years spent as a rural family doctor. He earned his Doctor of Osteopathic Medicine from AT Still University Kirksville College of Osteopathic Medicine in 1973 and did his postgraduate training as a captain in the US Army Medical Corps at Brooke Army Medical Center in San Antonio, Texas. Dr. Told was dean of RVUCOM and Vice President of Academic Affairs at Rocky Vista University in Colorado, where he established a rural and wilderness medicine curriculum, and is currently Dean Emeritus and clinical consultant for the school.

Dr. Told served on the ACOFP Board of Governors and was previously ACOFP president in 2006–2007. He was a member and eventually chair of the archival committee, executive council of conclave of fellows, awards committee, and he now chairs the 75th anniversary work group. Dr. Told was instrumental in creation of Book I of ACOFP History 1950–2003. Highly awarded, Dr. Told received the Lifetime Achievement Award in 2018, Osteopathic Family Physician Educator of the Year Award in 2014, Osteopathic Family Physician of the Year Award in 2012, Distinguished Fellow Award in 2014, and Fellow Award in 1991.

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SANDER A. KUSHNER, DO, FACOFP MEMORIAL OSTEOPATHIC FAMILY MEDICINE RESIDENT AWARD

The Sander A. Kushner, DO, FACOFP Memorial Osteopathic Family Medicine Resident Award, sponsored by the ACOFP Foundation, honors residents who demonstrate outstanding academic achievement and motivation for careers in osteopathic family medicine.

Thomas W. Duffy, DO

Dr. Thomas Duffy earned his DO in Osteopathic Medicine from Oklahoma State University College of Osteopathic Medicine in his hometown of Tulsa. Previously, he graduated from The University of Oklahoma with degrees in biology and interculture studies. His family residency was at Morton Comprehensive Health, a local Federally Qualified Health Center (FQHC) in the OSU system. Dr. Duffy pursues excellence in the profession—he was elected the wellness chief for his program, served on the ACOFP Resident Council, and led initiatives to increase the residency program's medical student retention, hospital discharge efficacy, and prescription of pre-exposure prophylaxis. Dr. Duffy plans to stay at Morton to provide primary care for uninsured Tulsans and partner with OSUCOM as an Adjunct Professor of Family Medicine in the urban underserved medicine track. He remains active in ACOFP, the benevolence team at his church, an all-physician D&D group, and FreshRX, a nonprofit that provides fresh produce to diabetic patients in Tulsa's food deserts.

AACOFP Auxiliary TO THE AMERICAN COLLEGE OF OSTEOPATHIC FAMILY PHYSICIANS

MARIE WISEMAN OUTSTANDING STUDENT OF THE YEAR AWARD

The Marie Wiseman Outstanding Osteopathic Student of the Year Award—selected in partnership between ACOFP and the Auxiliary to the ACOFP—recognizes an osteopathic medical student who demonstrates strong philanthropic and community service.

Ciara L. Robb, OMS-III

Ciara Robb, OMS-III, earned her bachelor's degree in biology from Southern Utah University and is currently studying toward her Doctor of Osteopathic Medicine at Rocky Vista University College of Medicine, from which she is expected to graduate in May 2025. Robb participates in the rural and wilderness medicine track. She is vice president of the National Student Executive Board within the ACOFP Student Association and was elected student governor for the 2024–2025 term.

She is a member of the Task Force on Engaging Student and president of the SA-ACOFP Chapter at RVUCOM-SU, where she twice won the AT Still Award. Robb actively serves the community as the Rural Health Scholars Student Program Coordinator and through the same organization volunteered and shadowed clinics in Nepal, Dominican Republic, and Ecuador. Additionally, she's volunteered as a Court Appointment Special Advocate (CASA) and was an emergency room, Silver Spurs and Canyon Creek Services volunteer.

EMERGING OSTEOPATHIC STUDENT LEADER AWARDS

Evan Bischoff, OMS-IV

Evan Bischoff, OMS-IV, earned his bachelor's degree from the University of Michigan and master's in biomedical sciences from Bluefield College/Edward Via College of Osteopathic Medicine. He is currently studying toward his Doctor of Osteopathic Medicine, also at VCOM, with an expected graduation in May 2024. He was previously ACOFP student governor from 2022–2023, a national student executive board member, and local chapter president. Bischoff currently runs a research project with Brian Dickens, DO, FACOFP, FAAFP, "Family Medicine Attitudes in Osteopathic Medical Students" exploring why DO students choose family medicine. As a leader in the Blacksburg, VA community, he previously led the Franklin County health fair, Project Linus blanket drive, and giving tree food pantry. Bischoff has also volunteered as a tutor through Community Action Network and a physical therapy volunteer with Veteran's Affairs Ann Arbor Healthcare System.

Kelsey McKenna, OMS-II

Kelsey McKenna, OMS-II, earned her bachelor's degree in applied mathematics from the University of Colorado Boulder and is currently studying toward her Doctor of Osteopathic Medicine at Rocky Vista University College of Osteopathic Medicine, from which she expects to graduate in 2026. She is in the Global Medicine Track. McKenna is president of the ACOFP Student Chapter at RVU-Colorado, Vice President of the SOMA RVU-Colorado chapter, and Community Outreach Officer of the Colorado Medical Society. She also volunteers with Special Olympics, Project Welcome (a refugee transition organization), and Denver Rescue Mission (a homeless shelter). Previously, she was a Peace Corps education volunteer in Lesotho, Southern Africa. Earlier this year, McKenna participated in Panama Global Medicine Outreach and in late summer, she will join the Kenya Cervical Cancer Research Study.

Kira Wence, OMS-III

Kira Wence, OMS-III, earned her bachelor's degree in biology and psychology from the University of Alabama and is currently studying toward her Doctor of Osteopathic Medicine at Edward Via College of Osteopathic Medicine. She is also a member of Omega Beta Iota, the Osteopathic Health Advocacy Honor Society, and Sigma Sigma Phi-Chi Chapter of the Osteopathic National Honors Society. She is a member of the ACOFP student chapter at VCOM, where she previously served as president and has led student events, including health fairs and screenings, workshops, and coordinated panels. This year, Wence will attend the national conference as a representative of the chapter as the current secretary of the ACOFP National Student Executive Board. She has volunteered at regional health fairs, food pantries, hospitals, and other community organizations, and is a previous Project Horseshoe Farm Community Health Fellow.

MASTER PRECEPTOR AWARDS

Steven H. Barag, DO, FACOFP

Dr. Steven Barag graduated from Kansas City University of Medicine and Biosciences College of Osteopathic Medicine and has practiced osteopathic family medicine for 50 years and counting. He is Medical Director of Aureus Medical Group and Principal Investigator of Rancho Cucamonga Clinical Research with over 75 trials to his credit. He is a Clinical Professor of Family Medicine for Western University, Touro, and CHSU. He is past Chief of Staff and on the Board of Trustees at San Antonio Regional Hospital and is Past President and current Convention Chair for ACOFP California. His passion is the mentoring of future medical professionals with an emphasis on choosing osteopathic family medicine as a lifelong career.

Brian A. Dickens, DO, FACOFP, FAAFP

Dr. Brian Dickens earned his Doctor of Osteopathic Medicine from the West Virginia School of Osteopathic Medicine and is currently an associate professor and chair of the Department of Family Medicine at the Edward Via College of Osteopathic Medicine. His commitment to training, education, and monitoring osteopathic medical students in family medicine is notable by any standard. Just by the numbers, Dr. Dicken's excellence in teaching runs deep: 10 academic appointments, nearly a dozen committee and leadership positions, eight clinical teaching roles, another eight professional affiliations, 13 professional service roles, and many more publications and presentations. Moving education from beyond the academic walls, he has also worked with the VCOM-Virginia Family Medicine Group to partner with another organization on a now-annual Family Medicine Procedural Clinic Workshop where students practice skills such as manipulative medicine, knee injections, suturing, and biopsies, and in addition, he has participated in half a dozen domestic and international mission trips.

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OF THE AMERICAN COLLEGE OF OSTEOPATHIC FAMILY PHYSICIANS

Fellow Awards of the American College of Osteopathic Family Physicians

The Fellow of the American College of Osteopathic Family Physician (FACOFP) is an honorary designation bestowed upon candidates who have contributed outstanding national and local service through teaching, authorship, research or professional leadership and who demonstrate dedication to ACOFP, as well as commitment to the health and welfare of their patients and to the future of osteopathic family medicine.

Patrick J. Botz, DO, FACOFP

Emily R. Copel, DO, FACOFP

Rebecca W. Daley, DO, FACOFP

Matthew A. Davis, DO, MBA, CPE, FACHE, FACOFP

Ann D. Glassman, DO, FACOFP

Hilary S. Haack, DO, FACOFP

Anna Z. Hayden, DO, FACOFP

Brandyn W. Mason, DO, FACOFP

Jared W. Nichols, DO, FACOFP

Fellow Awards of the American College of Osteopathic Family Physicians

Sean P. Perrine, DO, FACOFP

John T. Pham, DO, FACOFP

Andrew Pieleck, DO, FACOFP

Elly Riley, DO, FACOFP

Christine M. Rohanna, DO, FACOFP

Tracy Romanello, DO, FACOFP

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Distinguished Fellow Awards of the American College of Osteopathic Family Physicians

The designation of Distinguished Fellow of the American College of Osteopathic Family Physicians acknowledges those Fellows who have distinguished themselves through service to ACOFP by meeting attendance, as well as by their support of the ACOFP's local and national governance and committees.

Nancy A. Bono,
DO, FAAFP, FACOFP *dist*.

Ira P. Monka,
DO, MHA, FACOFP *dist*.

Antonios J. Tsompanidis,
DO, FACOFP *dist*.

Thomas J. Zimmerman,
DO, MBA, FACOFP *dist*.

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