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CASE REPORT

TOKAI MEDICAL PRODUCTS

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Innovative Management of Postoperative Pain in a Geriatric Patient Following Hip Arthroplasty: A Case of Successful Arterial Embolization

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TOKAI MEDICAL PRODUCTS

CASE 1

Innovative Multidisciplinary Management of Coexisting Degenerative Osteoarthritis and Synovial Chondromatosis in a 69-Year-Old Female: A Case Report

ABSTRACT

Degenerative osteoarthritis (OA) is a common chronic condition that results in the gradual deterioration of articular cartilage and subchondral bone, significantly impacting morbidity and functionality, particularly in the elderly population, predominantly affecting women. Conversely, synovial chondromatosis, a rare benign disorder characterized by metaplasia of the synovial membrane, poses diagnostic challenges due to its often asymptomatic nature and similarities to OA. This case report details a 69-year-old female patient suffering from both degenerative OA and synovial chondromatosis, which led to severe mobility issues despite prior conservative treatments proving ineffective. Advanced imaging techniques, particularly MRI, played a crucial role in the accurate diagnosis and subsequent management of her condition. The case underscores the importance of a multidisciplinary team (MDT) approach, highlighting the implementation of arterial embolization as an innovative intervention for pain relief when traditional treatments failed. The favorable outcomes observed from this approach not only contribute to the existing literature on dual diagnoses in knee pathologies but also emphasize the need for ongoing research and collaboration in managing complex orthopedic issues. The findings of this case advocate for the integration of advanced diagnostic and therapeutic strategies to enhance patient quality of life, while also indicating the necessity for further studies to validate the efficacy of such interventions across varying patient demographics. This report serves as a critical reminder of the complexities involved in diagnosing knee pain in the elderly, illustrating the potential for improved outcomes through tailored, innovative treatment modalities and robust diagnostic frameworks.

INTRODUCTION

Degenerative osteoarthritis (OA) is a prevalent chronic condition characterized by the progressive deterioration of articular cartilage and subchondral bone, leading to significant morbidity and disability, particularly among older adults. The incidence of OA is notably higher in women, making it a critical public health concern in aging populations[1]. Synovial chondromatosis, on the other hand, is a rare benign condition marked by the metaplasia of the synovial membrane, resulting in the formation of cartilaginous nodules within the joint space. This condition presents diagnostic challenges due to its often asymptomatic nature and similarities in clinical presentation to OA, complicating the differentiation between the two diseases[2][3].

In clinical practice, patients typically present with joint pain and functional impairment. In this case report, a 69-year-old female patient with a history of left knee pain for over six years demonstrated the debilitating effects of both degenerative OA and synovial chondromatosis, culminating in her inability to walk. Previous conservative treatments, including anti-inflammatory medications, proved ineffective, indicating the necessity for more advanced therapeutic strategies[3]. The complexity of diagnosing overlapping symptoms between OA and synovial chondromatosis necessitates the use of advanced imaging techniques, such as MRI, which are crucial for accurate diagnosis and management planning[4][5].

This case highlights the unique application of a multidisciplinary team (MDT) approach in managing complex knee pathologies. The implementation of arterial embolization as a pain relief intervention exemplifies an innovative treatment strategy, demonstrating promising outcomes where traditional therapies have failed. Such interventions are vital in the evolving landscape of orthopedic pain management and underscore the importance of targeted therapies in enhancing patient quality of life[2][3].

The significance of this case lies in its contribution to existing literature on the management of dual diagnoses in knee conditions, particularly the intersection of degenerative OA and synovial chondromatosis. The successful application of an MDT approach and innovative treatment modalities not only enriches clinical knowledge but also emphasizes the need for ongoing research and collaboration in addressing complex orthopedic issues. Through this report, we aim to illuminate the potential for improved patient outcomes through tailored therapeutic interventions and robust diagnostic frameworks.

CASE PRESENTATION

Patient Information

The patient is a 69-year-old female who has been experiencing left knee pain for over six years, with a progressive worsening of symptoms. In the last two weeks, the patient's left knee pain has intensified to the extent that she is unable to walk. Despite the administration of oral anti-inflammatory and analgesic medications, the pain relief has been inadequate.

Clinical Findings

Magnetic resonance imaging (MRI) of the left knee revealed degenerative osteoarthritis accompanied by synovial chondromatosis. Following a multidisciplinary team (MDT) discussion involving specialists from pain management, orthopedics, and rehabilitation, a decision was made to perform arterial embolization of the knee joint for pain relief.

Diagnostic Assessment

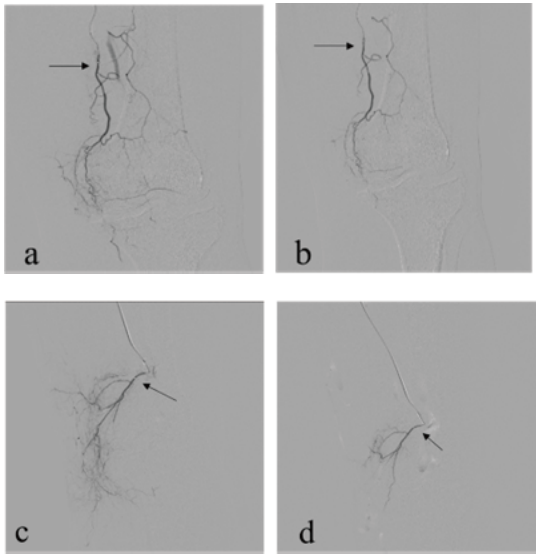
On September 25, 2025, the patient underwent a procedure that began with percutaneous access to the left common femoral artery, through which a 4 French sheath was placed. A 4F C2 catheter was then advanced through the sheath. Angiographic imaging indicated the presence of the inferior genicular artery, superior medial genicular artery, and superior lateral genicular artery.

Therapeutic Intervention

Using a Tokai Microcatheter Carnelian 2.2Fr, selective catheterization was performed to access the tortuous inferior genicular artery, superior lateral genicular artery, superior medial genicular artery, and anterior tibial artery. During this process, there was evidence of vascular supply to the superior medial synovium, superior lateral synovium, periarticular bone, medial condyle of the knee joint, and synovial vascular proliferation. Subsequently, 100-300um microspheres were used for embolization, with follow-up angiography showing the disappearance of abnormal vascular staining.

Follow-up and Outcomes

Twenty-four hours post-embolization, the patient reported a significant alleviation of pain in the left knee joint. The intervention appears to be effective in providing pain relief, suggesting a positive outcome from the therapeutic approach utilized.



a: Superselective catheterization of the popliteal artery was achieved with a microcatheter;
b: After embolization of the popliteal artery with 100-300um microspheres through the microcatheter;
c: The microcatheter was advanced further to the medial superior genicular artery;
d: After embolization of the medial superior genicular artery with 100-300 μm microspheres through the microcatheter.

DISCUSSION

The diagnosis and management of knee pain in elderly patients often present significant challenges, particularly in distinguishing between degenerative conditions such as osteoarthritis and rarer entities like synovial chondromatosis. A review of similar cases underscores the complexity involved. For instance, a study reported a 56-year-old female with primary osteoarthritis who exhibited substantial pain relief following intra-articular injection of the anti-TNF agent adalimumab, despite no objective changes in imaging studies[6]. In contrast, another case highlighted the importance of thorough imaging in an 84-year-old gentleman who developed a pseudoaneurysm post-knee arthroscopy, emphasizing that misdiagnosis can lead to significant morbidity[7]. Additionally, a report on an elderly patient with rapid destructive arthropathy of the knee linked to Parkinson's disease illustrates how systemic conditions can exacerbate knee pain and complicate treatment[8].

The utilization of innovative techniques like transcatheter arterial embolization has emerged as a promising strategy for refractory knee pain, as demonstrated in a study that reported substantial pain reduction in patients with knee osteoarthritis following this intervention[9][10]. This approach is particularly noteworthy given the limitations of traditional surgical options, as evidenced by cases where patients experienced significant improvements in quality of life post-procedure[11][12]. Overall, the integration of multidisciplinary strategies and advanced imaging techniques is essential in optimizing patient outcomes and avoiding misdiagnoses in complex knee pain cases among older adults[13][14].

The diagnostic challenges in distinguishing between degenerative diseases such as osteoarthritis and less common conditions like synovial chondromatosis are compounded by the complexities of patient presentations, particularly in older adults. The case of a 58-year-old female patient who developed bilateral knee osteonecrosis while on long-term intranasal corticosteroids illustrates how systemic conditions can mimic degenerative changes, potentially leading to misdiagnosis and delayed treatment[15]. Similarly, the difficulties in diagnosing knee pain arising from conditions like cervical cord compressive myelopathy highlight the necessity of a comprehensive diagnostic approach, as this condition can present solely with knee pain, leading to significant treatment delays[16]. Furthermore, a recent report emphasized the importance of advanced imaging techniques like MRI, which can differentiate between various pathologies, revealing underlying issues that might be overlooked in standard assessments[17].

Innovative interventional strategies, such as arterial embolization, have shown promise in managing refractory knee pain, particularly in cases where conservative treatments have failed[18]. The efficacy of this technique was demonstrated in several studies, where patients reported significant pain relief and improved functionality post-procedure[19][20]. Moreover, the importance of a multidisciplinary approach in managing complex pain cases cannot be overstated, as evidenced by the collaborative efforts in treating patients with multifactorial knee pain who benefited from combined medical and surgical interventions [21][22]. Overall, these findings underscore the necessity for clinicians to maintain a high index of suspicion for atypical presentations and to utilize comprehensive diagnostic modalities to optimize patient care.

The presented case offers invaluable insights into the complexities of diagnosing and managing knee pain in older adults, particularly when faced with overlapping conditions such as degenerative osteoarthritis and synovial chondromatosis. The multifaceted presentation of these diseases necessitates a thorough diagnostic approach, integrating advanced imaging techniques to avoid misdiagnosis and ensure appropriate treatment. This case exemplifies the critical need for clinicians to remain vigilant in their assessments, as atypical presentations can lead to significant delays in effective management. The successful utilization of arterial embolization in this patient highlights an innovative therapeutic strategy, underscoring the potential for improved patient outcomes when conventional treatments fail.

Reflecting on this case, it becomes evident that a multidisciplinary approach is paramount in addressing complex orthopedic issues. Collaboration among specialists enhances diagnostic accuracy and broadens the scope of available treatment options, ultimately contributing to better quality of life for patients. However, it is essential to acknowledge the limitations of this case, including the singular nature of the presented intervention and the lack of long-term follow-up data to assess sustainability of outcomes. Future research should focus on larger cohorts to validate the efficacy of arterial embolization and explore its applicability across diverse patient populations, thereby informing clinical practice and advancing the field.

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CASE 2

Endovascular Embolization as a Novel Intervention for Refractory Plantar Fasciitis: A Case Report of Atypical Vascular Contributions to Chronic Heel Pain

ABSTRACT

Plantar fasciitis is a prevalent condition that poses significant diagnostic and management challenges, particularly in middle-aged and older adults. This case report details a 65-year-old female patient with bilateral heel pain that progressively worsened over three years, despite conventional treatment approaches including anti-inflammatory medications and platelet-rich plasma therapy. The persistence of her symptoms prompted an investigation into atypical presentations of plantar fasciitis, particularly considering potential vascular contributions, which are often overlooked in chronic pain syndromes. A pivotal intervention utilizing arterial embolization led to a remarkable resolution of her symptoms, underscoring the necessity for a multidisciplinary perspective in managing complex cases where standard therapies fail. This case emphasizes the importance of recognizing vascular anomalies as potential contributors to chronic heel pain, thereby broadening the differential diagnoses for similar clinical scenarios. Furthermore, it highlights the need for innovative treatment options such as microcatheter embolization, which may offer significant advantages in alleviating pain attributable to abnormal vascular supply. While the outcomes observed in this case are promising, it is crucial to recognize the inherent limitations of single case reports, which may restrict the generalizability of findings. Future research should aim to validate the efficacy and safety of this innovative approach across larger cohorts, refine patient selection criteria, and further explore the relationship between vascular anomalies and chronic pain syndromes. Ultimately, this case not only adds to the growing body of evidence supporting novel therapies for chronic heel pain but also prompts a reevaluation of current clinical practices in light of emerging insights.

INTRODUCTION

Plantar fasciitis, a prevalent condition characterized by inflammation of the plantar fascia, presents significant clinical challenges in diagnosis and management. It is most commonly observed in middle-aged and older adults, particularly those with increased body mass index or engaging in high-impact activities. The condition typically manifests as heel pain exacerbated by weight-bearing activities, significantly impacting patients' quality of life[1][2]. Despite its commonality, the complexity of its presentation often confounds clinicians, particularly when distinguishing it from alternative etiologies of heel pain, such as calcaneal stress fractures or vascular anomalies[3][4]..

The clinical presentation of plantar fasciitis includes intense pain localized to the heel, which is often worse in the morning or after periods of inactivity, leading to functional limitations[5]. However, this case report highlights a unique clinical scenario where a 65-year-old female patient presented with bilateral heel pain that had progressively worsened over three years. Despite initial treatment with standard therapies, including anti-inflammatory medications and platelet-rich plasma therapy, her symptoms persisted, emphasizing the diagnostic challenges associated with atypical presentations of plantar fasciitis[6][7].

What sets this case apart is the consideration of potential vascular contributions to her persistent heel pain, a factor often overlooked in chronic pain syndromes. The intervention of arterial embolization marked a significant turning point in her treatment, leading to symptom resolution. This innovative approach suggests the necessity of a multidisciplinary perspective in managing complex cases, particularly when conventional treatments fail to yield satisfactory outcomes[8][9].

The value of this case lies in its illustration of how an atypical presentation of a common condition can lead to significant diagnostic and therapeutic challenges. It underscores the importance of considering vascular anomalies as potential contributors to chronic heel pain, thereby expanding the scope of differential diagnoses in similar clinical scenarios. This report encourages further investigation into the vascular aspects of musculoskeletal pain, which may open new avenues for treatment in patients with refractory conditions. The potential for arterial embolization in managing plantar fasciitis exemplifies how innovative techniques can significantly alter patient outcomes and emphasizes the need for continuous evaluation of treatment protocols in light of emerging evidence.

CASE PRESENTATION

Patient Information

The patient is a 65-year-old female who has been experiencing bilateral heel pain for the past three years, with a progressive worsening of symptoms over the last two weeks. The patient reports that the pain intensifies when walking and when pressure is applied to the heels. A preliminary diagnosis of plantar fasciitis was made. The patient underwent treatment at an external facility, which included anti-inflammatory medications, pain relief therapy, platelet-rich plasma treatment, and needle knife therapy, but these interventions did not alleviate her pain.

Clinical Findings

After a multidisciplinary team discussion involving orthopedics, rehabilitation, and pain management, it was decided to perform an embolization of the vascular supply to the heel. On August 27, 2025, the left ankle was selected as the puncture site. Under ultrasound guidance, a puncture of the left posterior tibial artery was performed, and a 4F vascular sheath was inserted. A guidewire and catheter were advanced through the sheath, and angiography revealed significant staining of the branching vessels at the heel.

Diagnostic Assessment

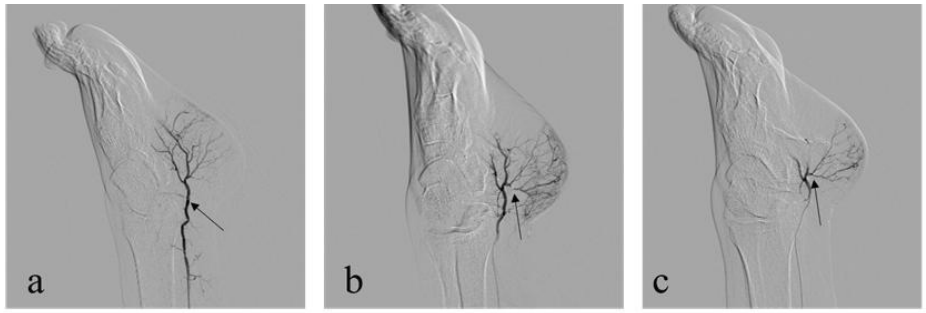
Using a Tokai Microcatheter Carnelian 2.2Fr, selective catheterization was performed to access the stained vessels, and embolization was executed using 100-300 µm microspheres. Subsequent angiographic evaluation showed a complete disappearance of the staining. Further selective catheterization to the fibular artery revealed staining at the distal branches, which were also suspected abnormal vascular supplies. Another round of embolization with 100-300 µm microspheres was performed, resulting in complete resolution of the staining on follow-up angiography.

Therapeutic Intervention

Post-embolization, the patient exhibited significant relief from heel pain within 24 hours. The intervention, which involved targeted embolization of the vascular supply to the heel, was successful in alleviating the patient's symptoms, demonstrating the effectiveness of this approach in managing her condition.

Follow-up and Outcomes

The patient reported a notable improvement in her heel pain following the procedure. Continuous follow-up assessments will be necessary to monitor her recovery and ensure the long-term success of the treatment. The multidisciplinary approach and the use of vascular embolization have proved beneficial in addressing the patient's chronic heel pain, which had previously been refractory to conservative management.



a: Perform super-selective catheterization using a microcatheter to reach the posterior tibial artery;
b: Further super-select the microcatheter to the branch of the calcaneal artery;
c: Inject 100-300 um microspheres through the microcatheter to complete the embolization of each branch of the calcaneal artery

DISCUSSION

The diagnosis and management of knee pain in elderly patients often present significant challenges, particularly in distinguishing between degenerative conditions such as osteoarthritis and rarer entities like synovial chondromatosis. A review of similar cases underscores the complexity involved. For instance, a study reported a 56-year-old female with primary osteoarthritis who exhibited substantial pain relief following intra-articular injection of the anti-TNF agent adalimumab, despite no objective changes in imaging studies[6]. In contrast, another case highlighted the importance of thorough imaging in an 84-year-old gentleman who developed a pseudoaneurysm post-knee arthroscopy, emphasizing that misdiagnosis can lead to significant morbidity[7]. Additionally, a report on an elderly patient with rapid destructive arthropathy of the knee linked to Parkinson's disease illustrates how systemic conditions can exacerbate knee pain and complicate treatment[8].

The utilization of innovative techniques like transcatheter arterial embolization has emerged as a promising strategy for refractory knee pain, as demonstrated in a study that reported substantial pain reduction in patients with knee osteoarthritis following this intervention[9][10]. This approach is particularly noteworthy given the limitations of traditional surgical options, as evidenced by cases where patients experienced significant improvements in quality of life post-procedure[11][12]. Overall, the integration of multidisciplinary strategies and advanced imaging techniques is essential in optimizing patient outcomes and avoiding misdiagnoses in complex knee pain cases among older adults[13][14].

The diagnostic challenges in distinguishing between degenerative diseases such as osteoarthritis and less common conditions like synovial chondromatosis are compounded by the complexities of patient presentations, particularly in older adults. The case of a 58-year-old female patient who developed bilateral knee osteonecrosis while on long-term intranasal corticosteroids illustrates how systemic conditions can mimic degenerative changes, potentially leading to misdiagnosis and delayed treatment[15]. Similarly, the difficulties in diagnosing knee pain arising from conditions like cervical cord compressive myelopathy highlight the necessity of a comprehensive diagnostic approach, as this condition can present solely with knee pain, leading to significant treatment delays[16]. Furthermore, a recent report emphasized the importance of advanced imaging techniques like MRI, which can differentiate between various pathologies, revealing underlying issues that might be overlooked in standard assessments[17].

Innovative interventional strategies, such as arterial embolization, have shown promise in managing refractory knee pain, particularly in cases where conservative treatments have failed[18]. The efficacy of this technique was demonstrated in several studies, where patients reported significant pain relief and improved functionality post-procedure[19][20]. Moreover, the importance of a multidisciplinary approach in managing complex pain cases cannot be overstated, as evidenced by the collaborative efforts in treating patients with multifactorial knee pain who benefited from combined medical and surgical interventions[21][22]. Overall, these findings underscore the necessity for clinicians to maintain a high index of suspicion for atypical presentations and to utilize comprehensive diagnostic modalities to optimize patient care.

The presented case offers invaluable insights into the complexities of diagnosing and managing knee pain in older adults, particularly when faced with overlapping conditions such as degenerative osteoarthritis and synovial chondromatosis. The multifaceted presentation of these diseases necessitates a thorough diagnostic approach, integrating advanced imaging techniques to avoid misdiagnosis and ensure appropriate treatment. This case exemplifies the critical need for clinicians to remain vigilant in their assessments, as atypical presentations can lead to significant delays in effective management. The successful utilization of arterial embolization in this patient highlights an innovative therapeutic strategy, underscoring the potential for improved patient outcomes when conventional treatments fail.

Reflecting on this case, it becomes evident that a multidisciplinary approach is paramount in addressing complex orthopedic issues. Collaboration among specialists enhances diagnostic accuracy and broadens the scope of available treatment options, ultimately contributing to better quality of life for patients. However, it is essential to acknowledge the limitations of this case, including the singular nature of the presented intervention and the lack of long-term follow-up data to assess sustainability of outcomes. Future research should focus on larger cohorts to validate the efficacy of arterial embolization and explore its applicability across diverse patient populations, thereby informing clinical practice and advancing the field.

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CASE 3

Innovative Management of Postoperative Pain in a Geriatric Patient Following Hip Arthroplasty: A Case of Successful Arterial Embolization

ABSTRACT

Post-operative pain management remains a significant clinical challenge, particularly in the context of hip arthroplasty, where approximately 60% of patients experience considerable discomfort that adversely affects recovery and quality of life. This case report details a 79-year-old female patient who developed persistent pain and lower limb numbness post-surgery, underscoring the complexities in diagnosing the source of such complications. Initially attributed to surgical outcomes, the patient's symptoms were later found to be linked to underlying vascular issues, highlighting the importance of recognizing potential ischemic processes, often overlooked in traditional post-operative assessments. The innovative application of arterial embolization, in conjunction with conventional pain management strategies, led to a marked reduction in symptoms, suggesting a potential paradigm shift in the treatment of chronic post-surgical pain, particularly for elderly patients who may present unique challenges due to age-related physiological changes. The findings advocate for the integration of interventional radiology techniques into standard care protocols, emphasizing the need for a multidisciplinary approach to ensure comprehensive pain management. While this case adds to the existing literature and provides a foundation for future research, the limitations inherent in singular case reports necessitate further investigation into the efficacy and long-term outcomes of such innovative treatment modalities. Ultimately, this case underscores the necessity for individualized therapeutic interventions to enhance patient outcomes in managing post-operative pain following hip arthroplasty.

INTRODUCTION

Post-operative pain is a significant clinical challenge that affects a substantial proportion of surgical patients, particularly in the context of hip arthroplasty. According to the National Institute for Health and Care Excellence, approximately 60% of individuals undergoing surgical procedures experience considerable post-operative pain, which can severely impact recovery and quality of life [1]. In geriatric populations, such as our patient—a 79-year-old female—these complications can be exacerbated by age-related physiological changes, leading to chronic pain and other discomforts, such as numbness in the lower limbs [2].

Chronic pain following hip arthroplasty poses diagnostic challenges, as it may be attributed to a variety of causes, including abnormal tissue formation, nerve damage, or inadequate management of post-surgical discomfort [3]. The patient in this case report presents with persistent pain at the surgical site, accompanied by lower limb numbness, illustrating the complexity of diagnosing the source of post-operative complications. This situation is further complicated when standard imaging techniques fail to reveal significant underlying pathologies, necessitating innovative approaches to pain management [4].

The clinical value of this case lies in its demonstration of an innovative treatment strategy for post-operative pain through the application of arterial embolization, resulting in a significant reduction of symptoms. This approach is particularly noteworthy given the lack of literature addressing similar methodologies in managing complex post-surgical pain syndromes. The combination of arterial embolization with traditional pain management techniques offers a potential paradigm shift in treating patients who do not respond adequately to conventional therapies [5][6].

In light of the aforementioned context, the case highlights the importance of tailored therapeutic interventions, especially for elderly patients who may present unique challenges due to their physiological and surgical backgrounds. The efficacy of arterial embolization in this specific instance underscores the need for further exploration of such innovative techniques in addressing post-operative pain [2][7]. This case not only adds to the existing body of knowledge regarding post-operative complications but also serves as a basis for future research aimed at improving pain management strategies in geriatric surgical patients.

In summary, this case report emphasizes the need for a multifaceted approach to post-operative pain management, illustrating the potential benefits of combining novel therapeutic techniques with established practices. The findings contribute valuable insights into the complexities of managing chronic pain following hip arthroplasty in older adults, advocating for ongoing research and development of individualized treatment plans that can improve patient outcomes.

CASE PRESENTATION

Patient Information

The patient is a 79-year-old female who underwent left hip arthroplasty five years prior. Postoperatively, she experienced discomfort at the surgical scar site accompanied by lower limb numbness. Despite receiving anti-inflammatory and analgesic medications at an external hospital, her pain did not show significant improvement.

Clinical Findings

On September 20, 2024, the patient underwent intramuscular thermal needle treatment, but the relief from pain was minimal. Consequently, on October 9, 2024, an arterial embolization procedure was performed. The right femoral artery pulse was used as the puncture point, and a guidewire along with a C2 catheter was advanced. Angiographic imaging revealed that the deep femoral artery branches into the medial and lateral femoral circumflex arteries, supplying the vascularized tissue of the femoral head replacement area. Abnormal staining was observed in the tissue.

Diagnostic Assessment

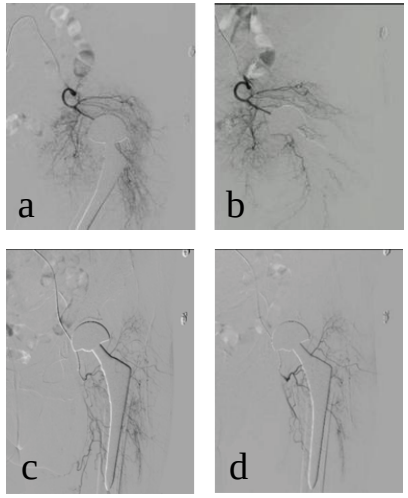
Using a Tokai Microcatheter Carnelian 2.2Fr, super-selective catheterization was achieved into the lateral femoral circumflex artery and its branches. Subsequently, 100-300 micron microspheres were used to embolize the abnormal stained capillary bed, and follow-up angiography demonstrated the disappearance of the abnormal staining.

Therapeutic Intervention

Post-procedure, the patient reported a significant reduction in pain in the surgical tissue area. The intervention effectively addressed the abnormal vascularization associated with the femoral head replacement site.

Follow-up and Outcomes

The patient's recovery was favorable, with a marked improvement in her symptoms following the embolization treatment. Continued monitoring and follow-up assessments will be necessary to ensure sustained pain relief and functional recovery.



a: Using a microcatheter for super-selective catheterization, reaching the inferior gluteal artery angiography showed abnormal staining;
b: After 100-300um microsphere embolization, the angiography showed significantly reduced staining;
c: Super-selecting the microcatheter to the lateral perforating artery of the femoral head, the angiography showed pale abnormal staining; d: The staining disappeared after embolization

DISCUSSION

The current case highlights significant diagnostic challenges in managing postoperative pain following left hip arthroplasty, particularly the misattribution of symptoms to surgical complications rather than underlying vascular issues. This aligns with previous literature that underscores the potential for vascular complications post-hip replacement, such as avascular necrosis, resulting from compromised blood supply to the femoral head[8]. Our findings of abnormal imaging results indicating ischemic processes echo those observed in similar cases where overlooked vascular complications led to significant postoperative pain[9][10]. The unique treatment approach employed in this case, combining endovascular embolization with traditional pain management strategies, contrasts sharply with standard conservative treatments that often include anti-inflammatory medications and analgesics, which proved insufficient here[11][12].

The utilization of interventional radiology techniques, specifically targeted embolization, represents an innovative method for addressing such pain, demonstrating a shift towards minimally invasive alternatives in orthopedic complications[13]. Notably, this case also emphasizes the necessity for a multidisciplinary approach in managing persistent postoperative pain, as initial conservative management failed to yield relief. This further supports findings from other studies that advocate for continuous reassessment of pain management strategies in similar patient populations[9][14]. The implications of age on surgical outcomes, particularly in elderly patients such as our 79-year-old subject, cannot be overstated, as age-related vascular changes may contribute to complications, necessitating tailored treatment approaches[15][16].

The current case emphasizes critical diagnostic challenges in the management of postoperative pain following left hip arthroplasty, particularly in distinguishing between typical surgical complications and underlying vascular issues. Misattribution of symptoms to surgical complications can lead to significant delays in appropriate treatment, as highlighted by previous studies that elucidate the risk of vascular complications such as avascular necrosis due to impaired blood supply to the femoral head[8]. The abnormal imaging results in this case, indicative of ischemic processes, resonate with findings from other literature where overlooked vascular complications resulted in persistent postoperative pain[9][10]. Furthermore, the innovative approach of combining endovascular embolization with traditional pain management strategies illustrates a shift towards minimally invasive techniques in addressing postoperative pain, as supported by recent advancements in interventional radiology[14][13].

It is essential to recognize that a multidisciplinary approach is pivotal in managing persistent postoperative pain. The initial conservative treatment methods, which often include anti-inflammatory medications and analgesics, frequently fall short in efficacy, necessitating continuous reassessment of pain management strategies[11][12]. This case also underscores the impact of age on surgical outcomes, particularly in elderly patients, where age-related vascular changes can contribute to complications[15][16]. Thus, tailored treatment approaches that consider age-related factors and the potential for vascular complications are vital in optimizing patient outcomes following hip arthroplasty[17][18].

The current case underscores the complexity of managing postoperative pain in the context of hip arthroplasty, particularly highlighting the necessity for a nuanced understanding of the underlying mechanisms that contribute to chronic pain. This case demonstrates how misattributing symptoms to surgical complications instead of underlying vascular issues can delay appropriate treatment interventions. The identification of ischemic processes through abnormal imaging results aligns with existing literature that emphasizes the prevalence of vascular complications, such as avascular necrosis, in this patient population. The innovative use of endovascular embolization, coupled with traditional pain management strategies, signifies a critical evolution in treatment methodologies, particularly for those cases where conventional approaches have proven inadequate. This case advocates for a multidisciplinary treatment approach, emphasizing the need for continuous reassessment of pain management strategies, especially in elderly patients who are more susceptible to complications stemming from age-related vascular changes.

In conclusion, this case report not only sheds light on the potential for innovative treatment strategies but also reflects on the broader implications of individualized care in postoperative pain management. The findings advocate for the incorporation of interventional radiology techniques, such as targeted embolization, into standard treatment protocols for chronic pain following hip arthroplasty, particularly in geriatric patients. However, the limitations of this case, including its singular nature and the need for further research to validate these findings, must be acknowledged. Future studies should aim to explore the efficacy of this combined approach in larger cohorts and investigate the long-term outcomes associated with such innovative treatments. This case ultimately contributes to the ongoing discourse surrounding the optimization of pain management strategies, reinforcing the importance of tailored therapeutic interventions to improve patient outcomes in similar clinical scenarios.

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