



ORTHO NEWSCAST



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Dear Doctor,

Greetings from Micro Labs. We are happy to bring you “Ortho Newscast” which contains latest and interesting news in the field of Orthopaedics.

This issue contains

- Comparison of the traditional direct lateral approach with the direct anterior approach regarding creatine kinase, C-reactive protein, and hemoglobin
- Evaluation of the treatment efficacy of dynamic condylar screws and proximal femoral nails for unstable intertrochanteric fractures
- Investigation of the complications following Total Hip Arthroplasty in patients with or without gout
- Case Report on Chondromyxoid Fibroma of the Clavicle

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Best Regards,

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Comparison of the traditional direct lateral approach with the direct anterior approach regarding creatine kinase, C-reactive protein, and hemoglobin

INTRODUCTION

The typical treatment for a dislocated femoral neck fracture (FNF) involves either hemiarthroplasty (HA) or total hip arthroplasty (THA). Three main surgical approaches to access the hip joint for FNF are the posterior approach (PA), the direct lateral approach (DLA), and the direct anterior approach (DAA). The standard PA was often avoided in this patient population due to a high reported incidence of dislocation. Although the DLA is commonly utilized for its low dislocation rates, it can lead to muscle weakness from gluteus medius dysfunction, potentially resulting in limping and pain.¹ In patients with FNF, the DAA has shown a significantly lower risk of dislocation compared to the posterior approach², and has been adopted as an alternative method for accessing the hip joint in this patient population.³ In terms of the invasiveness of hip joint approaches, prior research on THA in osteoarthritis (OA) patients has evaluated muscle damage, inflammation, and blood loss by comparing serum levels of creatine kinase (CK), C-reactive protein (CRP), and hemoglobin (Hb). However, the inflammatory response in patients with FNF has been less thoroughly studied.¹ So, this study was to compare the impact of the DAA versus the DLA on CK, CRP, and blood loss during the first four postoperative days in elderly patients with dislocated FNF undergoing THA.



Femoral Neck Fracture

DAA causes decreased CK and CRP elevation but no change in Hb in an older group with FNFs when compared to DLA.

METHODS

In this randomized controlled trial, 130 elderly patients with dislocated FNF undergoing THA were included. To meet the inclusion criteria, participants over 50 years old needed to have been ambulatory prior to the fracture. Patients were randomly assigned to either the DAA or the DLA in a 1:1 ratio, with all receiving a THA. Serum levels of CK, CRP, and Hb were measured preoperatively and on postoperative days 1 to 4, and outcomes were compared between the DAA and DLA groups using repeated measures mixed-effect models.



On the first postoperative day, CK levels were significantly higher in the DLA group, measuring 597 U/L (CI 529–666) compared to 461 U/L (CI 389–532) in the DAA group, with an estimated mean difference (MD) of 136 U/L (CI 38–235). However, no significant differences were observed on subsequent days (Figure 1). CRP levels were notably higher in the DLA group on postoperative days 3 and 4, with values of 207 mg/L (CI 189–226) vs 161 mg/L (CI 143–180), and an MD of 46 mg/L (CI 19–72) on day 3, and 162 mg/L (CI 144–181) vs 121 mg/L (CI 102–140), with an MD of 41 mg/L (CI 15–68) on day 4 (Figure 1). The difference in Hb levels, used to estimate blood loss, showed no significant variation between the groups.

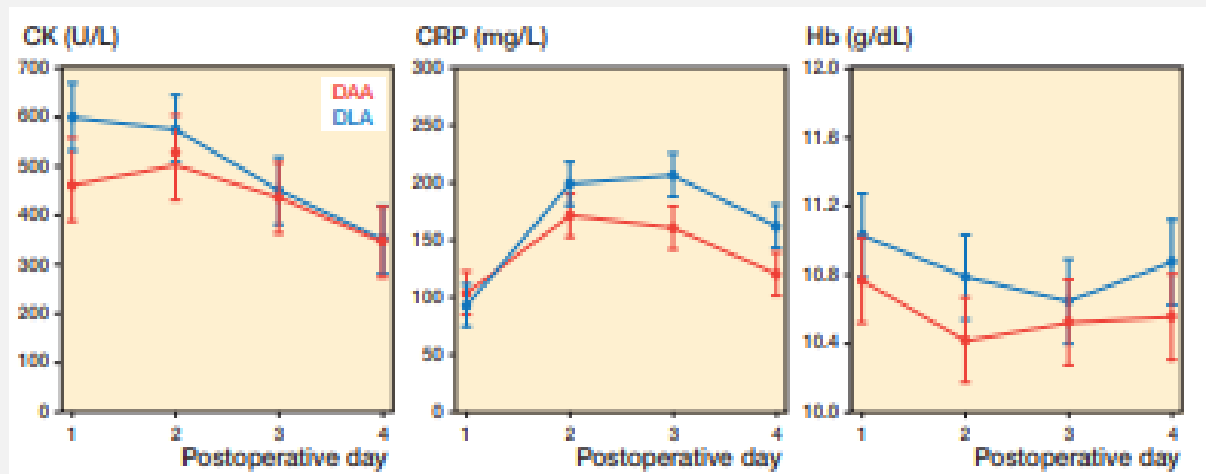


Figure 1. Following RMMEM analysis, variations in hemoglobin (HB), creatine kinase (CK), and C-reactive protein (CRP) were presented, along with a 95% confidence interval for each group on the several post-operative days.

DISCUSSION

The findings of this study indicate that the DAA in patients with FNF results in lower postoperative inflammation compared to the DLA, as reflected by CRP levels. Perioperative CRP levels may also be linked to postoperative mortality in patients undergoing surgery for hip fractures.⁴ There have been limited studies focusing on tissue damage, inflammation, and blood loss in patients with FNF undergoing THA. A recent randomized controlled trial compared the early clinical outcomes of the SuperPath approach with the DLA for THA in FNF patients. Consistent with these findings, they observed a significant increase in CK levels favoring the minimally invasive SuperPath; however, they did not find a difference in CRP levels between the two approaches. While they reported repeated measurements of CK and CRP, they did not employ a repeated measures mixed-effects model analysis, unlike this study.⁵

CONCLUSION

The present study demonstrated that postoperative levels of CK and CRP were lower following the DAA compared to the DLA, indicating reduced muscle damage and inflammation. Additionally, no significant differences in blood loss were observed between the two groups.



Clinically, these findings suggest that DAA may minimize tissue damage and inflammation. Further research is needed to determine if these potential benefits in the immediate postoperative period can lead to improved mobilization and lower morbidity and mortality rates among fracture patients.

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Evaluation of the treatment efficacy of dynamic condylar screws and proximal femoral nails for unstable intertrochanteric fractures

INTRODUCTION

Trochanteric fractures are among the most common types of hip fractures, particularly in older adults with osteoporotic bones, and typically occur due to low-energy trauma, such as falls.¹ Trochanteric fractures are defined as fractures in the proximal femur that extend from the extracapsular basilar neck to the lesser trochanter, and are located just above the medullary canal.² This type of fracture is common among older adults. Trochanteric fractures typically require surgical intervention, regardless of their specific geometry, unless there are contraindications such as serious comorbidities that increase risks during surgery or the recovery period. However, managing unstable patterns of trochanteric fractures can be particularly challenging, often leading to high rates of postoperative complications, including mortality. Current treatment options encompass intramedullary fixation methods like cephalomedullary nails and intramedullary hip screws, as well as extramedullary techniques such as dynamic hip screws (DHS), compression hip screws,

PFN provides shorter operating times than DCS, lowers the need for blood transfusions, achieves a greater closed reduction success rate, facilitates quicker fracture healing, and lowers the frequency of reoperation.



dynamic condylar screws (DCS), and proximal femoral locking compression plates.¹ For stable trochanteric fractures, the latest recommendations from the American Academy of Orthopedic Surgeons advocate for the use of DHS.³ For AO/OTA 31-A3 fractures, the DCS system with a 95° lag screw has traditionally been the preferred treatment choice. However, there have been reports of complications related to the implant.¹ This study sought to conduct a thorough assessment of the treatment options available for unstable intertrochanteric fractures, focusing on a comparison of the effectiveness of proximal femoral nails (PFN) versus dynamic condylar screws (DCS) in their management.

METHODS

In this meta-analysis, a comprehensive search was conducted to identify relevant randomized controlled trials and retrospective observational studies comparing PFN with DCS for treating unstable femoral intertrochanteric fractures. The search encompassed research published from January 1996 to April 2024 across databases including PubMed, EMBASE, Scopus, Web of Science, Cochrane Library, and Google Scholar. The full texts of the identified studies were retrieved, reviewed, and independently assessed by two investigators. Any disagreements were resolved through consensus, and unresolved issues were mediated by a third author. The study ultimately included six articles, encompassing a total of 173 patients.

RESULTS

In comparison to the DCS, the PFN resulted in a shorter operation time [mean difference (MD): -41.7 minutes, 95% confidence interval (95% CI): -63.04 to -20.35, $P = 0.0001$] (Figure 1), higher success rates with closed reduction techniques [risk ratio (RR): 34.05, 95% CI: 11.12-104.31, $P < 0.00001$], and required fewer intraoperative blood transfusions (MD: -1.4 units, 95% CI: -1.80 to -1.00, $P < 0.00001$). Furthermore, the PFN demonstrated a shorter time to fracture union (MD: -6.92 weeks, 95% CI: -10.27 to -3.57, $P < 0.0001$) (Figure 2) and a lower rate of reoperation (RR: 0.37, 95% CI: 0.17-0.82, $P = 0.01$). However, there were no significant differences noted in terms of hospital stay, implant-related complications, or infections.

Comparison of effectiveness indicators between dynamic condylar screws and proximal femoral nails using forest plot

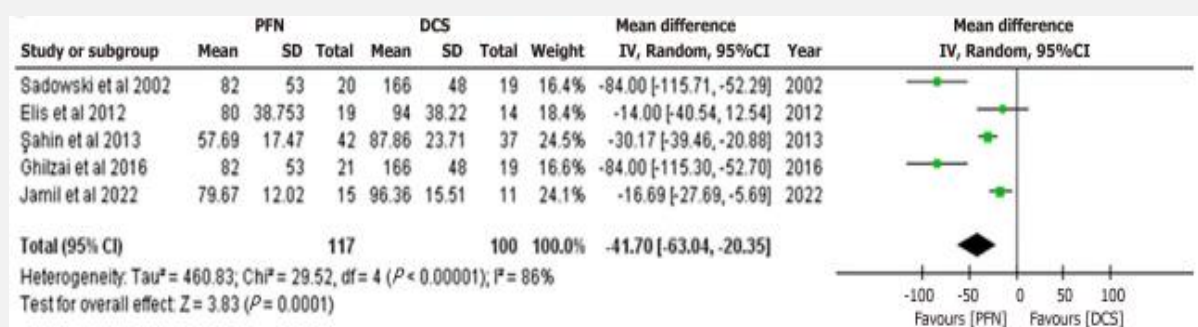


Figure 1. Impact on earlier fracture union time in week

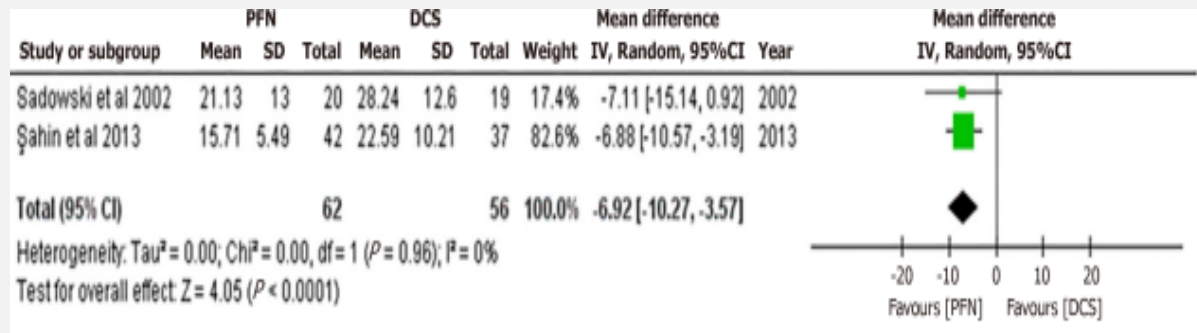


Figure 2. Impact on the length of the operation in minute. 95%CI: 95% Confidence interval; DCS: Dynamic condylar screws; PFN: Proximal femoral nails

DISCUSSION

This study indicates that the PFN is a dependable implant that enhances the healing process for unstable intertrochanteric fractures while reducing the need for blood transfusions and shortening surgical durations. The shorter operating time underscores PFN's efficacy in the surgical treatment of these fractures, likely due to its smaller incision and less muscle damage. In contrast, the DCS requires a larger incision, whereas PFN is typically inserted using a minimally invasive technique that avoids direct access to the fracture site.⁴

CONCLUSION

This study demonstrated that the PFN was a dependable implant that yielded satisfactory functional and radiological results in the treatment of unstable intertrochanteric fractures. Importantly, PFN often enhances the healing process, reduces the need for blood transfusions and operation times, decreases the likelihood of reoperation, and achieves greater success rates with closed reduction techniques.

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Investigation of the complications following Total Hip Arthroplasty in patients with or without gout



INTRODUCTION

Gout is the most common type of inflammatory arthritis globally, characterized by intermittent episodes of intense joint pain referred to as gout flares.¹ The elderly are especially vulnerable to gout, as the risk of developing the condition rises with age. Depending on different research methods, the prevalence of gout was estimated to range from less than 1% to 6.8%, with an incidence rate of 0.58 to 2.89 cases per 1,000 person-years.² Studies indicate that gout occurs more frequently in men than in women, with ratios ranging from 3:1 to 10:1. Additionally, gout was linked to various comorbidities, including cardiovascular and renal diseases. Due to the inflammatory response associated with gout, understanding its effect on orthopedic surgical outcomes was crucial. Total hip arthroplasty (THA) has become a popular and highly effective surgical option, experiencing increased demand.¹ However, there was a lack of research focusing on the outcomes of primary THA in patients with a history of gout. Existing studies on gout and post-primary THA outcomes often involve relatively small patient samples or fail to account for comorbidities. So, this study sought to fill this gap by examining complications after THA in both patients with and without gout.

Patients with gout undergoing primary THA face a higher likelihood of various medical complications. These results offer valuable insights for the management and expectations of orthopedic surgery in individuals with gout.

METHODS

In this retrospective study, patients with a history of gout in the two years prior to their primary THA and who had at least two years of follow-up were identified using a national insurance database and compared to a matched control group at a ratio of 5:1. A total of 32,466 patients with gout and 161,514 patients without gout undergoing THA were included. Multivariable logistic regression analyses were conducted to assess medical complications within 90 days and surgical complications within two years. Additionally, records of 90-day emergency department visits and inpatient readmissions were also collected.

RESULTS

Patients with gout exhibited higher rates of medical complications, including deep vein thrombosis, blood transfusions, acute kidney injury, and urinary tract infections, compared to those without gout ($p < 0.001$). They also experienced greater rates of pulmonary embolism ($p = 0.017$). Additionally, gout patients had increased incidences of surgical complications, particularly wound issues and periprosthetic joint infections ($p < 0.001$). The risk of requiring revision surgery was higher for gout patients within 90 days ($p = 0.003$), one year ($p = 0.027$), and two years ($p = 0.039$). There was also an elevated risk of dislocation for gout patients within 90 days ($p = 0.022$) and one year ($p = 0.047$), though not at two years. No significant differences were found in rates of aseptic loosening or periprosthetic fractures. Furthermore,



gout patients had a greater likelihood of emergency department visits and readmissions within 90 days ($p < 0.001$) (Table 1).

Table 1. Patient Postoperative Outcomes

Variable	Gout (n = 32,466)	MC (n = 161,514)	Adjusted (95% CI)	OR	Adjusted p-value
Pneumonia (90 days)	379 (1.17)	1,848 (1.14)	1.01 (0.90–1.13)		0.785
Pulmonary embolism (90 days)	193 (0.59)	793 (0.49)	1.21 (1.03–1.41)		0.017*
Cerebrovascular accident (90 days)	237 (0.73)	1,086 (0.67)	1.08 (0.93–1.24)		0.266
Deep vein thrombosis (90 days)	654 (2.01)	2,594 (1.61)	1.25 (1.14–1.36)		< 0.001*
Transfusion (90 days)	870 (2.68)	3,228 (2.00)	1.35 (1.25–1.45)		< 0.001*
Acute kidney injury (90 days)	952 (2.93)	3,144 (1.95)	1.52 (1.41–1.63)		< 0.001*
Urinary tract infection (90 days)	1,325 (4.08)	5,680 (3.52)	1.16 (1.09–1.24)		< 0.001*
Sepsis (90 days)	243 (0.75)	1,089 (0.67)	1.10 (0.95–1.26)		0.162
Myocardial infarction (90 days)	182 (0.56)	893 (0.55)	1.00 (0.85–1.18)		0.905
Wound complications (90 days)	885 (2.73)	3,350 (2.07)	1.32 (1.22–1.42)		< 0.001*
Periprosthetic joint infection (90 days)	412 (1.27)	1,695 (1.05)	1.20 (1.08–1.34)		< 0.001*
Periprosthetic joint infection (1 year)	568 (1.75)	2,415 (1.50)	1.16 (1.06–1.28)		< 0.001*
Periprosthetic joint infection (2 years)	696 (2.14)	2,880 (1.78)	1.20 (1.10–1.30)		< 0.001*
Dislocation (90 days)	408 (1.26)	1,787 (1.11)	1.13 (1.01–1.26)		0.022*
Dislocation (1 year)	539 (1.66)	2,435 (1.51)	1.09 (1.00–1.20)		0.047*
Dislocation (2 years)	607 (1.87)	2,867 (1.78)	1.05 (0.96–1.14)		0.266
Aseptic loosening (90 days)	65 (0.20)	314 (0.19)	1.02 (0.78–1.33)		0.839
Aseptic loosening (1 year)	166 (0.51)	817 (0.51)	1.00 (0.85–1.19)		0.908
Aseptic loosening (2 years)	269 (0.83)	1,329 (0.82)	1.00 (0.88–1.14)		0.930
Periprosthetic fracture (90 days)	152 (0.47)	786 (0.49)	0.95 (0.80–1.13)		0.641
Periprosthetic fracture (1 year)	214 (0.66)	1,054 (0.65)	1.00 (0.86–1.16)		0.917
Periprosthetic fracture (2 years)	260 (0.80)	1,299 (0.80)	0.99 (0.86–1.13)		0.922
Revision (90 days)	426 (1.31)	1,810 (1.12)	1.17 (1.05–1.30)		0.003*
Revision (1 year)	654 (2.01)	2,956 (1.83)	1.10 (1.00–1.19)		0.027*
Revision (2 years)	808 (2.49)	3,710 (2.30)	1.08 (1.00–1.17)		0.039*
ED visit (90 days)	3,923 (12.08)	16,401 (10.15)	1.21 (1.17–1.26)		< 0.001*

*Statistical significance with $p < 0.05$.

DISCUSSION

Patients with gout who had primary THA exhibited significantly higher rates of deep vein thrombosis (DVT), blood transfusions, acute kidney injury (AKI), and urinary tract infections (UTI). They also showed increased rates of pulmonary embolism (PE) compared to those without gout. In a study by Chen et al., similar complications were analyzed, excluding transfusions, and it was found that only AKI had a statistically significant higher complication rate after THA.³ Hyperuricemia was recognized as an independent risk factor linked to AKI.⁴ Wound complications in patients with gout occur at a significantly higher rate of 2.73%, compared to 2.07% in those without gout. Chen et al. also reported a statistically significant increase in wound healing issues, with 12.2% of gout patients experiencing complications, compared to 5.1% of non-gout patients after THA.³



The findings indicated that patients with gout undergoing primary THA face a higher likelihood of various medical complications. Additionally, these patients experienced an increased incidence of surgical issues, including wound complications, periprosthetic joint infections (PJI), dislocations, and the need for revision surgery. However, there was no significant increase in the risk of aseptic loosening or periprosthetic fractures in gout patients after primary THA. These results offer valuable insights into the management and expectations of orthopedic surgery in individuals with gout.

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Case Report on Chondromyxoid Fibroma of the Clavicle

INTRODUCTION

Chondromyxoid fibroma (CMF) is an uncommon benign tumor derived from cartilage, representing less than 1% of all primary bone tumors.¹ The occurrence of CMF shows a bimodal distribution, with one peak occurring in the second to third decades of life and another later peak between the fifth and seventh decades.² CMF appears to affect males and females equally.¹ The proximal tibial metaphysis is the most frequent site for CMF, followed by the distal femur and pelvis. The upper limb is less commonly affected, making the occurrence of CMF in the clavicle quite rare.² The histological characteristics of CMF include a lobulated structure made up of spindle or star-shaped cells that are abundant in myxoid or chondroid intercellular substance.³ The common occurrence of cellular atypia, featuring pleomorphic hyperchromatic nuclei and a high proliferation rate, may result in misdiagnosis as myxoid chondrosarcoma or chondroblastoma. While CMF is classified as a benign tumor due to the absence of metastasis, it can exhibit locally aggressive behavior, with an estimated recurrence rate of 25%.¹

When diagnosing an indolent growing tumor in this anatomic location, chondromyxoid fibroma of the clavicle should be considered as a differential diagnosis.

CASE PRESENTATION



The authors describe a case involving a 30-year-old Caucasian male bus driver, who is right-handed and has a history of a childhood diaphyseal fracture of the right clavicle, treated conservatively elsewhere. He presented with sudden pain and tenderness following indirect trauma to his right shoulder, denying any prior pain in that area. Clinical examination revealed significant swelling and a palpable, hard mass measuring 6×3 cm over the middle third of the right clavicle, which was not attached to the skin. The patient showed limited shoulder movement due to pain and was placed in a shoulder sling. Radiographs indicated an incomplete pathological diaphyseal fracture within an expanded osteolytic lesion in the middle third of the clavicle, characterized by well-defined margins, peripheral cortical thinning, and central erosion. A CT scan showed a 6×3.5 cm osteolytic lesion with a chondroid matrix and internal septa, along with an incomplete antero-superior pathological fracture. MRI revealed the lesion as isointense on T1-weighted images and hyperintense on T2-weighted images, displaying a lobulated heterogeneous pattern post-contrast. A CT-guided biopsy demonstrated moderate cellularity of fusiform cells within a chondromyxoid stroma, with no atypical features. After two weeks of immobilization, the patient experienced a reduction in swelling but continued to have tenderness in the middle third of the right clavicle and limited active movement, achieving only 100 degrees of anterior elevation. The patient then underwent en-bloc resection of the lesion. Histopathological analysis of the resected tissue revealed a high cellular index of fusiform and stellate cells with chondromyxoid characteristics, confirming the diagnosis of clavicle CMF (Figure 1). Immunohistochemical testing indicated low expression of SMA and S100 protein. The postoperative recovery was smooth. Four weeks after surgery, the patient began a rehabilitation program focusing on passive and active assisted shoulder mobilization and regained excellent function in his right shoulder. At the one-year follow-up, he demonstrated an active range of motion of 160° in anterior elevation, 160° in abduction, 60° in external rotation, and 80° in internal rotation. By the two-year follow-up, he had a Constant score of 80, and the most recent radiographs and CT scans showed bone graft consolidation with no signs of disease recurrence.

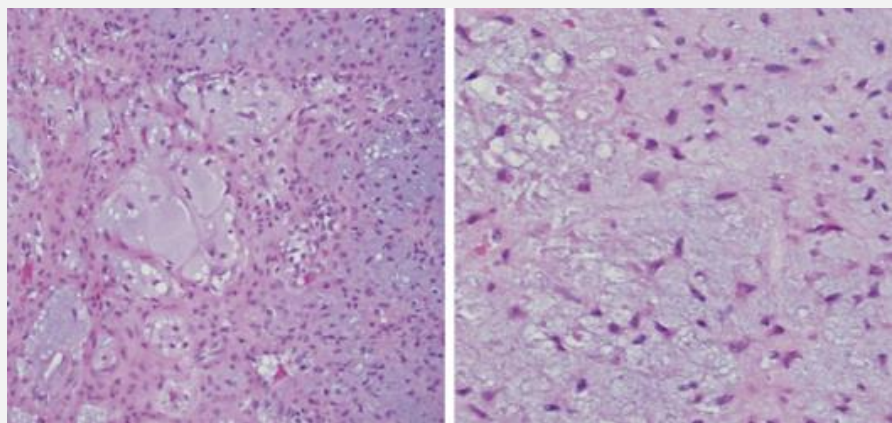


Figure 1. Magnified image of histological analysis of the center section of the resected specimen exhibiting spindle and stellate cells with myxoid stroma.

DISCUSSION

To the authors' knowledge, only eight cases of clavicular CMF have been documented in the literature, highlighting the rarity of this condition. The differential diagnosis for CMF should consider myxoid chondrosarcoma, chondroblastic osteosarcoma, fibrous dysplasia,



chondroblastomas, and osteomyelitis.⁴ A comprehensive clinical history, detailed physical examination, and careful radiologic assessment are essential for accurate diagnosis.⁵ The typical clinical presentation of clavicular CMF involves a gradual increase in pain and swelling resulting from the tumor's slow growth.² Patients may experience limited shoulder mobility due to mechanical compression. In this case, the patient was asymptomatic prior to the trauma. Radiologically, CMF can exhibit locally aggressive characteristics, including cortical thinning, bone erosion, and destruction. On magnetic resonance imaging, CMF appears isointense on T1-weighted images and hyperintense on T2-weighted images.² The conclusive diagnosis is determined by histopathological findings, obtained through either needle biopsy or open biopsy when needle biopsy does not yield sufficient samples.

CONCLUSION

This rare case of clavicular CMF was managed through en-bloc resection and reconstruction using an autologous tricortical iliac crest bone graft. Diagnosing this condition necessitates a high degree of suspicion and integration of findings from physical examinations, radiologic imaging, and histopathological analysis. CMF of the clavicle should be considered in the differential diagnosis of a slowly enlarging mass in this anatomical area.

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