

World Journal of *Clinical Cases*

World J Clin Cases 2023 December 16; 11(35): 8242-8433



Contents

Thrice Monthly Volume 11 Number 35 December 16, 2023

EDITORIAL

- 8242 Antibiotic treatment in cirrhotic patients
Fiore M, Leone S

MINIREVIEWS

- 8247 Research progress on preparation of lateral femoral tunnel and graft fixation in anterior cruciate ligament reconstruction
Dai Y, Gao WJ, Li WC, Xiang XX, Wang WM
- 8256 Accessory navicular in children
Xiang F, Liu ZQ, Zhang XP, Li YJ, Wen J
- 8263 Non-pharmacological pain palliation methods in chronic pancreatitis
Tez M, Şahingöz E, Marlı HF

ORIGINAL ARTICLE

Retrospective Study

- 8270 Ratio of hemoglobin to mean corpuscular volume: A new index for discriminating between iron deficiency anemia and thalassemia trait
Yao QC, Zhai HL, Wang HC
- 8276 Influence of standardized nursing intervention combined with mindfulness stress reduction training on the curative effect in patients with acute pancreatitis
Li S, Yin D, Guo XC
- 8284 Clinical analysis of 114 cases of bronchiolitis in infants
Shi C, Wu MH, Zuo A, Yang MM, Jiang RR
- 8291 Endovenous laser treatment *vs* conventional surgery for great saphenous vein varicosities: A propensity score matching analysis
Li Q, Zhang C, Yuan Z, Shao ZQ, Wang J
- 8300 Efficacy of prednisone combined with mycophenolate mofetil for immunoglobulin A nephropathy with moderate-to-severe renal dysfunction
Meng MJ, Hu L, Fan Y, Gao H, Chen HZ, Chen CM, Qi Z, Liu B
- 8310 Efficacy of surgical resection and ultra-reduced tension suture combined with superficial radiation in keloid treatment
Hu XY, Yang Q, Guan XY, Li JY, Wang LL, Li K, Zhang XT

Observational Study

- 8320** Prior abdominal surgery as a potential risk factor for colonic diverticulosis or diverticulitis
Ariam E, Richter V, Bermont A, Sandler Y, Cohen DL, Shirin H

META-ANALYSIS

- 8330** Vericiguat treatment of heart failure: A systematic review and meta-analysis
Yang H, Luo C, Lan WQ, Tang YH

CASE REPORT

- 8343** Rare synchronous colorectal carcinoma with three pathological subtypes: A case report and review of the literature
Li F, Zhao B, Zhang L, Chen GQ, Zhu L, Feng XL, Yao H, Tang XF, Yang H, Liu YQ
- 8350** Twin pregnancy with sudden heart failure and pulmonary hypertension after atrial septal defect repair: A case report
Tong CX, Meng T
- 8357** Diffuse arterial atherosclerosis presenting with acute ischemic gastritis: A case report
Wei RY, Zhu JH, Li X, Wu JY, Liu JW
- 8364** Balloon venoplasty for disdialysis syndrome due to pacemaker-related superior vena cava syndrome with chylothorax post-bacteraemia: A case report
Yamamoto S, Kamezaki M, Ooka J, Mazaki T, Shimoda Y, Nishihara T, Adachi Y
- 8372** Malignant pleural mesothelioma mimics thoracic empyema: A case report
Yao YH, Kuo YS
- 8379** Multifocal papillary thyroid cancer in Graves' disease: A case report
Alzaman N
- 8385** Anlotinib in combination with pembrolizumab for low-grade myofibroblastic sarcoma of the pancreas: A case report
Wu RT, Zhang JC, Fang CN, Qi XY, Qiao JF, Li P, Su L
- 8392** Ankle and toe weakness caused by calcified ligamentum flavum cyst: A case report
Jung HY, Kim GU, Joh YW, Lee JS
- 8399** Atypical case of bow hunter's syndrome linked to aberrantly coursing vertebral artery: A case report
Ahn JH, Jun HS, Kim IK, Kim CH, Lee SJ
- 8404** Phleboscrosis: An overlooked complication of varicose veins that affects clinical outcome: A case report
Ren SY, Qian SY, Gao RD
- 8411** Inflammatory cutaneous metastases originating from gastric cancer: A case report
Tian L, Ye ZB, Du YL, Li QF, He LY, Zhang HZ

- 8416** Metastatic pancreatic solitary fibrous tumor: A case report

Yi K, Lee J, Kim DU

- 8425** Abemaciclib-induced lung damage leading to discontinuation in brain metastases from breast cancer: A case report

Yamashiro H, Morii N

LETTER TO THE EDITOR

- 8431** Letter to the editor: Aggressive variant prostate cancer: An exemplary case study and comprehensive literature survey

Ke HW, Zhang WY, Xu KX

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Md Moshir Rahman, MBBS, Assistant Professor, Department of Neurosurgery, Holy Family Red Crescent Medical College Hospital, Dhaka 1000, Bangladesh. dr.tutul@yahoo.com

AIMS AND SCOPE

The primary aim of *World Journal of Clinical Cases* (WJCC, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

INDEXING/ABSTRACTING

The WJCC is now abstracted and indexed in Science Citation Index Expanded (SCIE, also known as SciSearch®), Journal Citation Reports/Science Edition, Current Contents®/Clinical Medicine, PubMed, PubMed Central, Reference Citation Analysis, China Science and Technology Journal Database, and Superstar Journals Database. The 2023 Edition of Journal Citation Reports® cites the 2022 impact factor (IF) for WJCC as 1.1; IF without journal self cites: 1.1; 5-year IF: 1.3; Journal Citation Indicator: 0.26; Ranking: 133 among 167 journals in medicine, general and internal; and Quartile category: Q4.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: Hua-Ge Yin; Production Department Director: Xiang Li; Editorial Office Director: Jin-Lei Wang.

NAME OF JOURNAL

World Journal of Clinical Cases

ISSN

ISSN 2307-8960 (online)

LAUNCH DATE

April 16, 2013

FREQUENCY

Thrice Monthly

EDITORS-IN-CHIEF

Bao-Gan Peng, Salim Surani, Jerzy Tadeusz Chudek, George Kontogeorgos, Maurizio Serati

EDITORIAL BOARD MEMBERS

<https://www.wjgnet.com/2307-8960/editorialboard.htm>

PUBLICATION DATE

December 16, 2023

COPYRIGHT

© 2023 Baishideng Publishing Group Inc

INSTRUCTIONS TO AUTHORS

<https://www.wjgnet.com/bpg/gerinfo/204>

GUIDELINES FOR ETHICS DOCUMENTS

<https://www.wjgnet.com/bpg/GerInfo/287>

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

<https://www.wjgnet.com/bpg/gerinfo/240>

PUBLICATION ETHICS

<https://www.wjgnet.com/bpg/GerInfo/288>

PUBLICATION MISCONDUCT

<https://www.wjgnet.com/bpg/gerinfo/208>

ARTICLE PROCESSING CHARGE

<https://www.wjgnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjgnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>



Ankle and toe weakness caused by calcified ligamentum flavum cyst: A case report

Ho-Young Jung, Geon-U Kim, Yong-Won Joh, Jun-Seok Lee

Specialty type: Medicine, research and experimental

Provenance and peer review: Unsolicited article; Externally peer reviewed.

Peer-review model: Single blind

Peer-review report's scientific quality classification

Grade A (Excellent): 0
Grade B (Very good): B
Grade C (Good): 0
Grade D (Fair): 0
Grade E (Poor): 0

P-Reviewer: Lu M, China

Received: September 5, 2023

Peer-review started: September 5, 2023

First decision: November 1, 2023

Revised: November 6, 2023

Accepted: December 4, 2023

Article in press: December 4, 2023

Published online: December 16, 2023



Ho-Young Jung, Geon-U Kim, Yong-Won Joh, Jun-Seok Lee, Department of Orthopedic Surgery, Eunpyeong St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Seoul 03312, South Korea

Corresponding author: Jun-Seok Lee, MD, PhD, Professor, Department of Orthopedic Surgery, Eunpyeong St. Mary's Hospital, College of Medicine, The Catholic University of Korea, 1021 Tongil-Ro, Eunpyeong-gu, Seoul 03312, South Korea. junband@naver.com

Abstract

BACKGROUND

Ligamentum flavum cysts, which are most common in mobile junctional levels of the spine, can be a rare cause of spinal stenosis. There have been several case reports of ligamentum flavum cysts. However, there is yet to be a documented case report of a calcified ligamentum flavum cyst. Herein, we report the first case of a calcified ligamentum flavum cyst causing ankle and toe weakness.

CASE SUMMARY

A 66-year-old male visited our hospital complaining of claudication as well as thigh and calf pain in his left leg, all beginning two weeks prior. Physical examination revealed motor weakness of the left ankle dorsiflexion and great toe dorsiflexion. Lumbar spinal computed tomography scans showed spinal stenosis combined with a calcified mass at the left side of the L4-5 level. Magnetic resonance imaging showed dural sac compression caused by the calcified mass at the left ligamentum flavum of the L4-5 level. We performed decompressive laminectomy and excision of the calcified mass combined with posterior lumbar interbody fusion at the L4-5 level. Intra-operatively, we found a firm and nodule like mass originating from the ventral surface of ligamentum flavum. Pathological examination suggested a calcified pseudocyst without a capsular lining. After the operation, the patient's motor weakness in the ankle and great toe improved gradually.

CONCLUSION

The patient's ankle and great toe weakness were improved successfully after surgical removal of the calcified cyst.

Key Words: Ligamentum flavum; Calcified cyst; Spinal stenosis; Claudication; Motor weakness; Spine; Case report

Core Tip: Ligamentum flavum cyst in lumbar spine can be a rare cause of spinal stenosis. There have been several case reports of ligamentum flavum cysts. However, to the best of our knowledge, no calcified ligamentum flavum cyst has been reported. We report the first case of a calcified ligamentum flavum cyst causing neurological claudication and motor weakness of lower extremities. We believe that our report would be useful for a diagnostic approach and treatment in patients who have spinal stenosis with neurological claudication and motor weakness.

Citation: Jung HY, Kim GU, Joh YW, Lee JS. Ankle and toe weakness caused by calcified ligamentum flavum cyst: A case report. *World J Clin Cases* 2023; 11(35): 8392-8398

URL: <https://www.wjgnet.com/2307-8960/full/v11/i35/8392.htm>

DOI: <https://dx.doi.org/10.12998/wjcc.v11.i35.8392>

INTRODUCTION

Ligamentum flavum cysts are a rare cause of spinal stenosis, which causes neurological claudication and pain in the lower extremities[1]. Ligamentum flavum cysts appear on the ventral surface of the ligament without any connections to articular facets. The precise pathogenic mechanism underlying the formation of ligamentum flavum cysts remains unclear. However, the development of these cysts has been suggested to be associated with persistent micro-instability at the motion segment and concomitant micro-trauma, which can increase the risk of cyst formation[2]. There have been several reports of ligamentum flavum cyst[3-8]. However, to our knowledge, there has yet to be a report of a calcified cyst of ligamentum flavum. Herein, we report the first case of a calcified ligamentum flavum cyst presenting ankle and toe weakness.

CASE PRESENTATION

Chief complaints

A 66-year-old male presented with claudication, thigh and calf pain and motor weakness in his left leg.

History of present illness

He complained of weakness in his left great toe and ankle beginning two weeks prior to his visit, and the complained that his symptoms had become gradually aggravated with time.

History of past illness

Hypertension as underlying disease.

Personal and family history

There was no specific family health history.

Physical examination

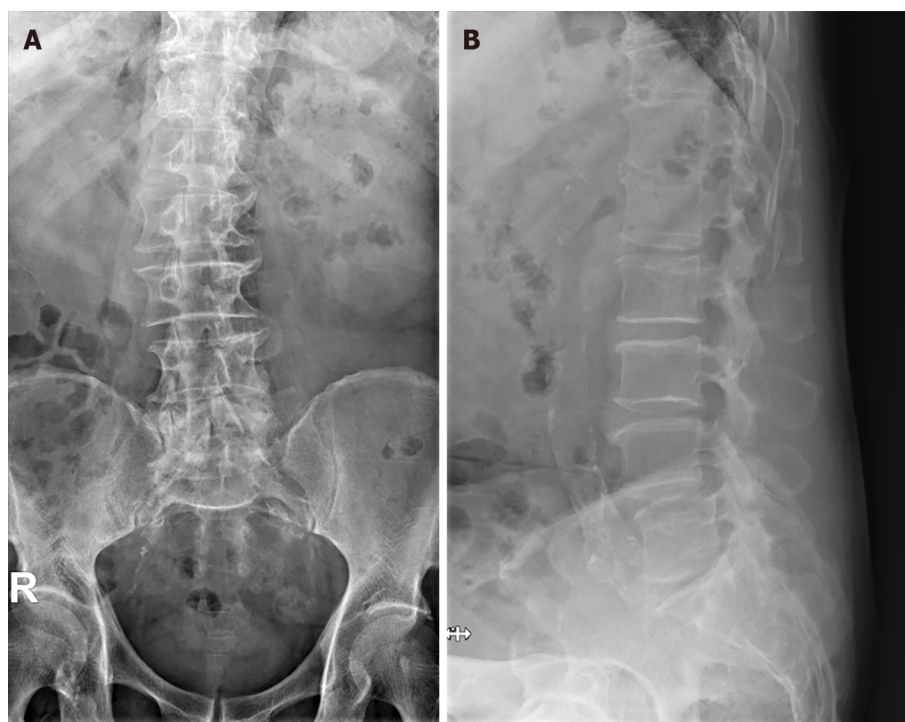
Motor weakness of the left ankle dorsiflexion (grade 2) and great toe dorsiflexion (grade 0 to 1).

Laboratory examinations

When the patient admitted to our hospital, laboratory investigations revealed low levels of hemoglobin (10.5 g/dL, normal range: 14.0-18.0) with low levels of hematocrit (30.7 %, normal range: 42.0-52.0). White blood cell count was $6.70 \times 10^9/L$ [normal range: $(4.0-10.0) \times 10^9$] and platelet count was $240 \times 10^9/L$ [normal range: $(150-450) \times 10^9$]. Coagulation function test: Prothrombin time (PT): 10.0 s (normal range: 9.7-13.3); PT%: 119% (normal range: 77-120); international normalized ratio: 0.90 (normal range: 0.88-1.20); activated partial thromboplastin time: 28.8 s (normal range: 23.1-37.3). These results were all within normal ranges.

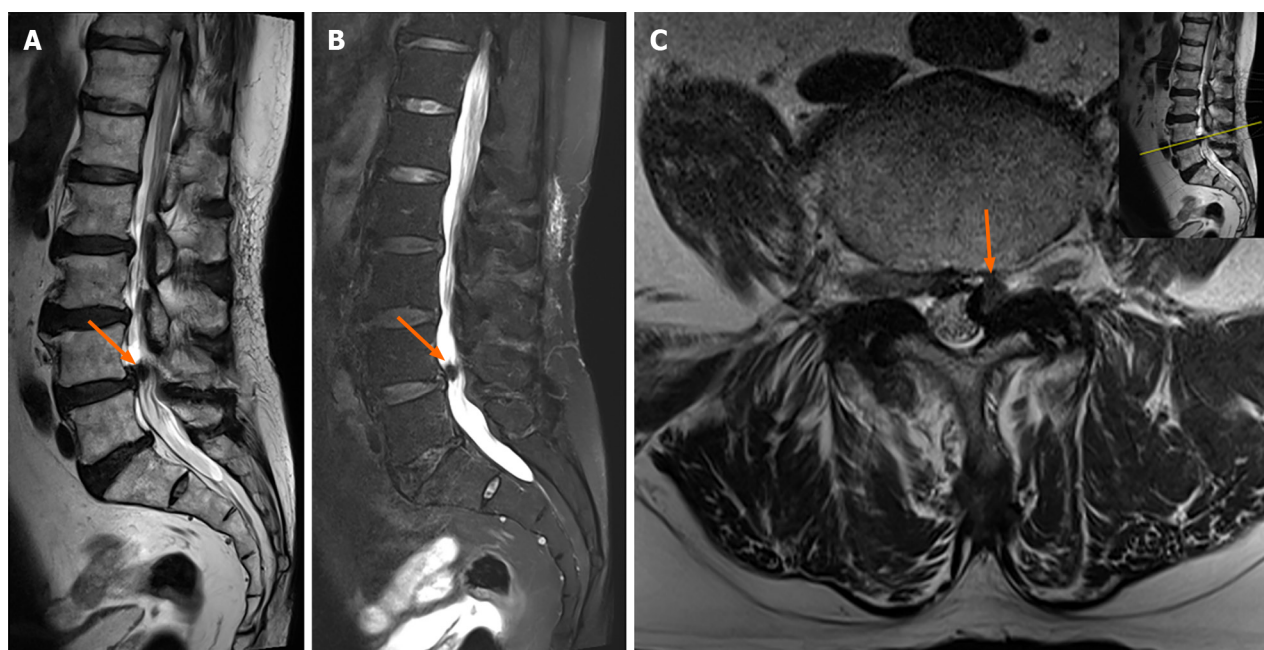
Imaging examinations

Plain radiograph of the lumbar spine showed degenerative changes and spondylolisthesis L4 on L5 (Figure 1). Magnetic resonance imaging (MRI) showed protrusion disc and dural sac compression attributable to a mass at the L4-5 level (Figure 2). Lumbar spinal computed tomography (CT) scans showed spinal stenosis combined with dural sac compression caused by a calcified mass at the left side of the L4-5 level (Figure 3).



DOI: 10.12998/wjcc.v11.i35.8392 Copyright ©The Author(s) 2023.

Figure 1 Plain radiographs of the lumbar spine. A: Lumbar spine anteroposterior X-ray; B: Lumbar spine lateral flexion X-ray showing degenerative changes and spondylolisthesis L4 on L5.

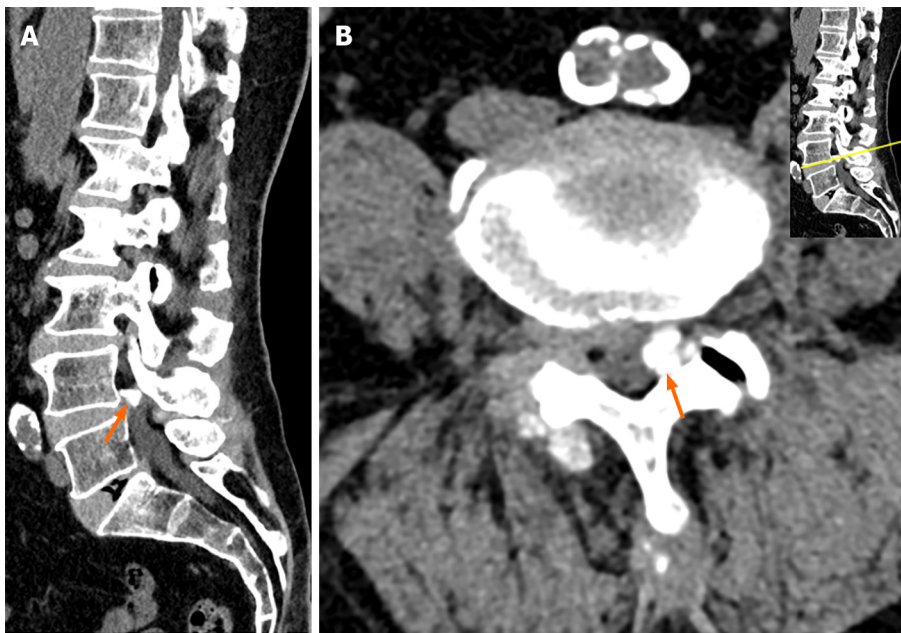


DOI: 10.12998/wjcc.v11.i35.8392 Copyright ©The Author(s) 2023.

Figure 2 Preoperative magnetic resonance imaging of the lumbar spine. A: Sagittal T2-weighted magnetic resonance imaging (MRI) showing a mass lesion with a hypointense signal at the L4-5 level (arrow); B: Sagittal fat-suppressed T2-weighted MRI showing a mass lesion with a hypointense signal at the L4-5 level (arrow); C: Axial T2-weighted MRI of the corresponding section showing left side dural sac compression by a mass (arrow).

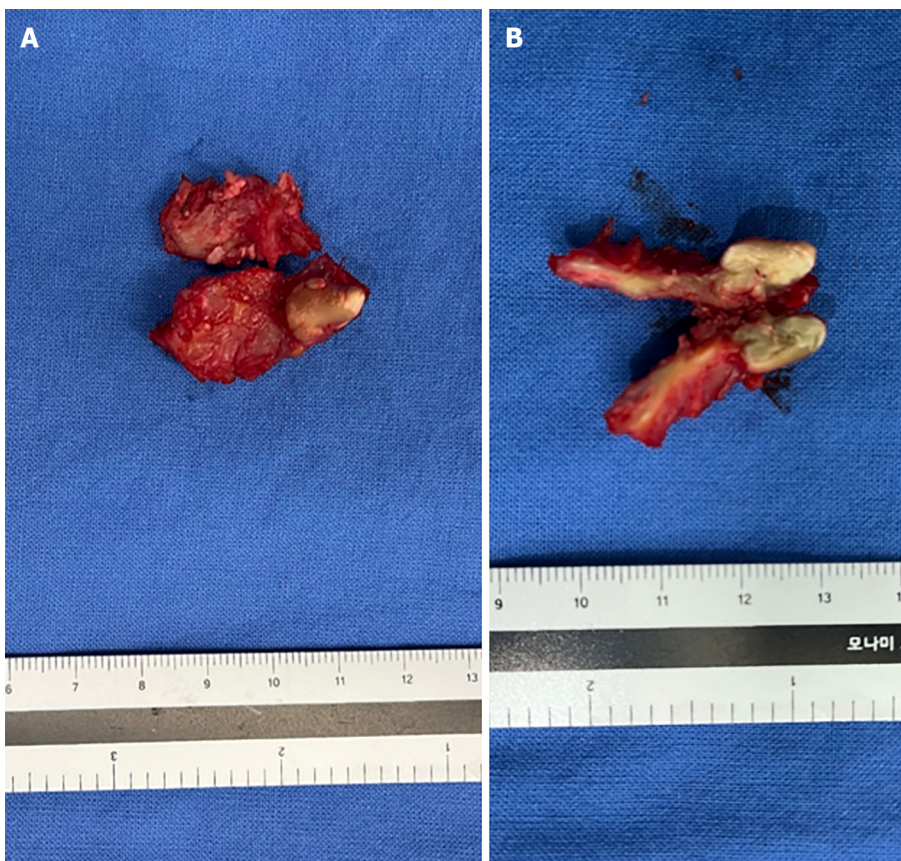
FINAL DIAGNOSIS

Calcified pseudocyst of ligamentum flavum was confirmed by histological examination after surgery (Figures 4 and 5).



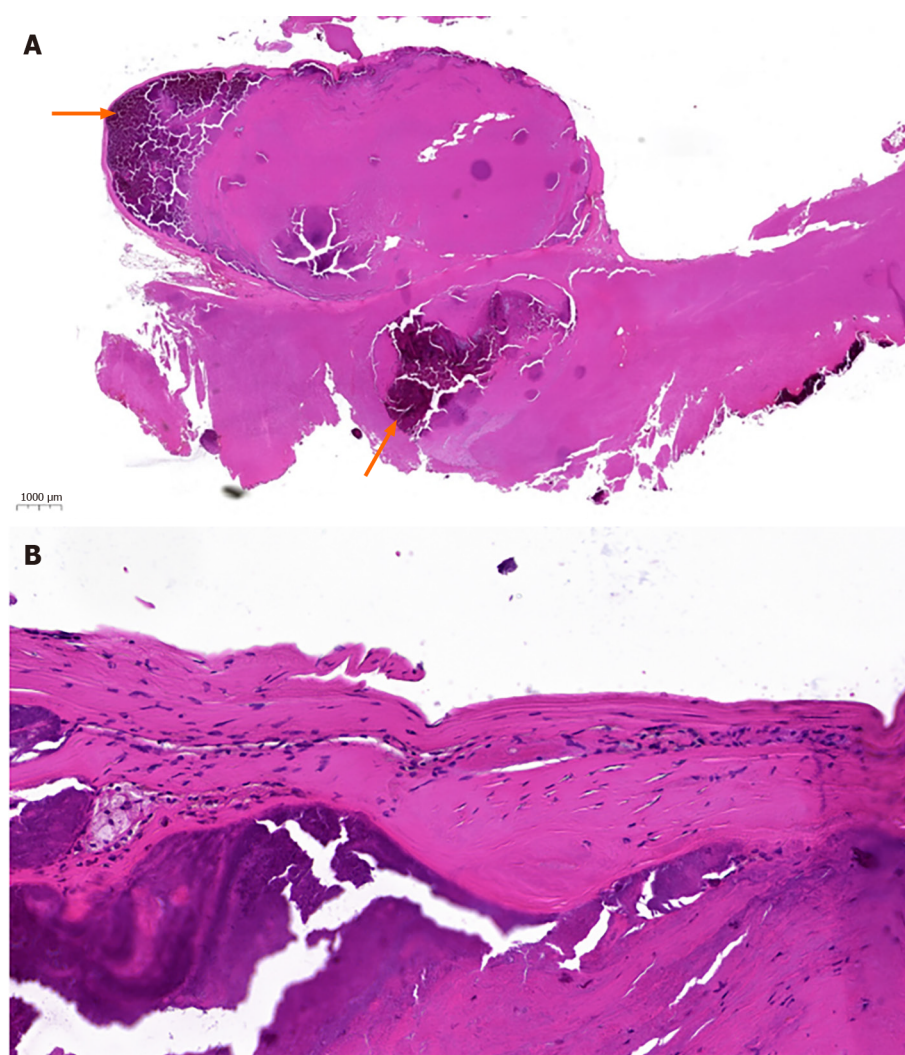
DOI: 10.12998/wjcc.v11.i35.8392 Copyright ©The Author(s) 2023.

Figure 3 Computed tomography scans of the lumbar spine. A: Sagittal computed tomography (CT) scan showing a calcified mass at the L4-5 level (arrow); B: Axial CT scan showing a calcified mass at the left side of the L4-5 level (arrow).



DOI: 10.12998/wjcc.v11.i35.8392 Copyright ©The Author(s) 2023.

Figure 4 Intraoperative clinical photographs of the excised calcified cyst. A firm, brown-colored, nodule-like mass originating from the ventral surface of the left side ligamentum flavum was found. A: Ventral surface of the excised ligamentum flavum; B: Cross-section of the excised calcified cyst.



DOI: 10.12998/wjcc.v11.i35.8392 Copyright ©The Author(s) 2023.

Figure 5 Microscopic images of the excised calcified cyst. A: Low magnification ($\times 8$) image showing a cyst in the ventral surface of ligamentum flavum with dark purple-colored calcified material in the cyst (arrow); B: Higher magnification ($\times 20$) image showing no identifiable epithelial cell lining.

TREATMENT

Decompressive laminectomy and excision of the calcified mass for lumbar spinal stenosis, along with posterior lumbar interbody fusion at the L4-5 level for spondylolisthesis were performed.

OUTCOME AND FOLLOW-UP

Immediately after surgery, the pain in his left thigh and calf improved, but the motor weakness in his left ankle and great toe remained. On the fourth postoperative day, histological examination confirmed a calcified pseudocyst of ligamentum flavum (Figure 5). Two weeks after the operation, the motor weakness in the patient's ankle and great toe had improved gradually, and he was discharged from the hospital.

DISCUSSION

Ligamentum flavum cyst was first described by Moiel *et al*[8] in 1967, in a case where it compressed dural sac and presented as testicular pain and leg radiating pain. Ligamentum flavum cyst can be distinguished from facet joint cyst by its location on the ventral surface of the ligamentum flavum without any connections to articular facet[9,10]. The pathogenic mechanism of ligamentum flavum cyst has yet to be clearly identified. Segmental instability and micro-trauma have been described as major causes of the formation of ligamentum flavum cysts[9-11]. Segmental instability and micro-trauma at motion segment are believed to predispose one to cyst formation. Ligamentum flavum consists of elastic fiber with a reduced amount of collagen fibers. When lesions occur due to micro-trauma or segmental instability, the

regeneration of elastic fibers is extremely limited. This limited regeneration leads to a decrease in the elasticity of ligamentum flavum along with the deposition of collagen[12]. The accumulation of collagen in ligamentum flavum leads to progressive degeneration, and the myxoid changes can form cysts[13]. In our case, we found a segmental instability with grade I spondylolisthesis at the L4-5 level in our patient. It could also be considered a possible cause of cyst formation. However, the mechanism of calcification of ligamentum flavum cyst is unknown. It is presumed that calcification additionally occurred in the degenerative change of ligamentum flavum.

In general, ligamentum flavum cyst can be diagnosed using MRI. Ligamentum flavum cyst typically appears as hyperintense on T2-weighted images and as hypointense on T1-weighted images, where it appears as a cyst arising from the ventral surface of ligamentum flavum[6]. In our case, axial images of the L4-5 level showed left side dural sac compression by a mass that appears as hypointense on T2-weighted and T1-weighted images. Based on these MRI findings, we considered the mass to be a sequestered disc material. However, lumbar CT scans revealed dural sac compression by the calcified mass at the left side of the L4-5 level. It was then surgically confirmed that the mass was a calcified cyst of ligamentum flavum cysts. In this way, performing CT scans along with MRI can aid one in making an accurate diagnosis.

Conservative treatment, such as that consisting of medication and percutaneous steroid injections, can be performed in ligamentum flavum cysts. However, these conservative therapies have not shown successful long-term results[4,14]. Surgical decompression with cyst excision is the treatment of choice when conservative treatment fails[4,14]. In this case, we decided to perform surgical removal of the calcified ligamentum flavum cyst due to the progression of motor weakness.

CONCLUSION

To our knowledge, the treatment reported herein is the first surgical treatment for calcified ligamentum flavum cyst causing ankle and toe weakness. We performed surgical decompression and excision of the calcified cyst. After the surgery, the patient's motor weakness gradually improved.

ACKNOWLEDGEMENTS

We thank Dr. Eun-Sun Jung for her suggestions regarding the preparation of pathologic slides. We also thank the patient for providing consent for this case report.

FOOTNOTES

Author contributions: Lee JS conceived and designed the study, and performed the surgery; Jung HY, Kim GU, and Joh YW prepared the figures and collected the data; Jung HY and Lee JS wrote the manuscript; and all authors read and approved the final manuscript.

Informed consent statement: The patient included in the present case gave their consent prior to study inclusion.

Conflict-of-interest statement: All the authors report no relevant conflicts of interest for this article.

CARE Checklist (2016) statement: The authors have read the CARE Checklist (2016), and the manuscript was prepared and revised according to the CARE Checklist (2016).

Open-Access: This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <https://creativecommons.org/licenses/by-nc/4.0/>

Country/Territory of origin: South Korea

ORCID number: Jun-Seok Lee 0000-0003-4321-9611.

S-Editor: Wang JJ

L-Editor: A

P-Editor: Yu HG

REFERENCES

- 1 Kwon JW, Moon SH, Park SY, Park SJ, Park SR, Suk KS, Kim HS, Lee BH. Lumbar Spinal Stenosis: Review Update 2022. *Asian Spine J* 2022; 16: 789-798 [PMID: 36266248 DOI: 10.31616/asj.2022.0366]

- 2 **Onofrio BM**, Mih AD. Synovial cysts of the spine. *Neurosurgery* 1988; **22**: 642-647 [PMID: 3374775 DOI: 10.1227/00006123-198804000-00004]
- 3 **Taha H**, Bereksei Y, Albanna W, Schirmer M. Ligamentum flavum cyst in the lumbar spine: a case report and review of the literature. *J Orthop Traumatol* 2010; **11**: 117-122 [PMID: 20582448 DOI: 10.1007/s10195-010-0094-y]
- 4 **Seo DH**, Park HR, Oh JS, Doh JW. Ligamentum flavum cyst of lumbar spine: a case report and literature review. *Korean J Spine* 2014; **11**: 18-21 [PMID: 24891868 DOI: 10.14245/kjs.2014.11.1.18]
- 5 **Kalidindi KKV**, Bhat MR, Gupta M, Mannem A, Chhabra HS. Ligamentum Flavum Cyst With Acute Onset Motor Deficit: A Literature Review and Case Series. *Int J Spine Surg* 2020; **14**: 544-551 [PMID: 32986576 DOI: 10.14444/7072]
- 6 **Singh V**, Rustagi T, Mahajan R, Priyadarshini M, Das K. Ligamentum Flavum Cyst: Rare Presentation Report and Literature Review. *Neurol India* 2020; **68**: 1207-1210 [PMID: 33109878 DOI: 10.4103/0028-3886.299172]
- 7 **Ayberk G**, Ozveren F, Gök B, Yazgan A, Tosun H, Seçkin Z, Altundal N. Lumbar synovial cysts: experience with nine cases. *Neurol Med Chir (Tokyo)* 2008; **48**: 298-303; discussion 303 [PMID: 18654048 DOI: 10.2176/nmc.48.298]
- 8 **Moiel RH**, Ehni G, Anderson MS. Nodule of the ligamentum flavum as a cause of nerve root compression. Case report. *J Neurosurg* 1967; **27**: 456-458 [PMID: 6059418 DOI: 10.3171/jns.1967.27.5.0456]
- 9 **Baker JK**, Hanson GW. Cyst of the ligamentum flavum. *Spine (Phila Pa 1976)* 1994; **19**: 1092-1094 [PMID: 8029749 DOI: 10.1097/00007632-199405000-00019]
- 10 **Wildi LM**, Kurrer MO, Benini A, Weishaupt D, Michel BA, Brühlmann P. Pseudocystic degeneration of the lumbar ligamentum flavum: a little known entity. *J Spinal Disord Tech* 2004; **17**: 395-400 [PMID: 15385879 DOI: 10.1097/01.bsd.0000109837.59382.0e]
- 11 **Howington JU**, Connolly ES, Voorhies RM. Intraspinal synovial cysts: 10-year experience at the Ochsner Clinic. *J Neurosurg* 1999; **91**: 193-199 [PMID: 10505504 DOI: 10.3171/spi.1999.91.2.0193]
- 12 **Viejo-Fuertes D**, Liguoro D, Rivel J, Midy D, Guerin J. Morphologic and histologic study of the ligamentum flavum in the thoraco-lumbar region. *Surg Radiol Anat* 1998; **20**: 171-176 [PMID: 9706675 DOI: 10.1007/BF01628891]
- 13 **Yoshida M**, Shima K, Taniguchi Y, Tamaki T, Tanaka T. Hypertrophied ligamentum flavum in lumbar spinal canal stenosis. Pathogenesis and morphologic and immunohistochemical observation. *Spine (Phila Pa 1976)* 1992; **17**: 1353-1360 [PMID: 1462211 DOI: 10.1097/00007632-199211000-00015]
- 14 **Bureau NJ**, Kaplan PA, Dussault RG. Lumbar facet joint synovial cyst: percutaneous treatment with steroid injections and distention--clinical and imaging follow-up in 12 patients. *Radiology* 2001; **221**: 179-185 [PMID: 11568337 DOI: 10.1148/radiol.2211010213]



Published by **Baishideng Publishing Group Inc**
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA

Telephone: +1-925-3991568

E-mail: bpgoffice@wjgnet.com

Help Desk: <https://www.f6publishing.com/helpdesk>

<https://www.wjgnet.com>

