Nepal Orthopedic Association Journal
https://doi.org/10.59173/noaj.20251101i

CASE REPORT

Breakage of a Pituitary Rongeur Tip while performing Microscopic Lumbar Discectomy and its retrieval: a Case Report

Rajesh Kumar Chaudhary[1], Deepak Kaucha[1], Ram Krishna Barakoti[1], Babu Kaji Shrestha[1]
[1]B&B Hospital, Gwarko, Lalitpur, Nepal

ABSTRACT

BACKGROUND

Microscopic lumbar discectomy is the common surgical procedure performed for lumbar disc herniation. The incidence of instrument breakage during discectomy ranges from 1% for micro-endoscopic discectomy to 3.1% for open discectomy. We report a case of L5-S1 lumbar disc herniation with left sided radiculopathy who was managed surgically. Breakage of the tip of the pituitary rongeur was encountered during microscopic lumbar discectomy. Several attempts were performed to retrieve the metallic foreign body under fluoroscopy, but it migrated more anteriorly and medially. Nephroscope was used with the help of urologist but was not successful. Due to continuous flow of normal saline, it moved more posteriorly and laterally which was removed by bigger size pituitary rongeur. Patient improved clinically and postoperative period is uneventful till 9 months. To our knowledge, only 8 case reports have been published regarding breakage of tip of pituitary rongeur so far.

KEYWORDS

Microscopic Lumbar Discectomy, Breakage of pituitary rongeur, complication

INTRODUCTION

Breakage of instrument while performing orthopedic surgery is not that common, reported incidence ranges from 0.18% to 0.35%.[1,2] Microscopic lumbar discectomy is commonly performed procedure for lumbar disc herniation. The incidence of breakage of surgical instruments during discectomy ranges from 1% for micro-endoscopic discectomy to 3.1% for open microscopic discectomy.[3] This increases the risk of further injury, surgical time and adds unnecessary stress to the surgeon. Retention of broken instrument increase risk of anterior displacement, bleeding, embolization, other retroperitoneal insults and even recurrence of radiculopathy.[4]

We are reporting a case of L5-S1 lumbar disc herniation with left sided radiculopathy who underwent microscopic lumbar discectomy and developed breakage of tip of pituitary rongeur which was retrieved. To our knowledge till now, only 8 case reports have been published regarding broken pituitary rongeur during discectomy. We have obtained IRC approval and patient consent for publication.

CORRESPONDENCE

Dr Rajesh Kumar Chaudhary
B&B Hospital, Gwarko, Lalitpur, Nepal,
Tel: +977-9841318158
Email: drraju.rajesh@gmail.com

CASE REPORT

46 years old lady with diagnosis of L5-S1 paracentral disc extrusion with left sided radiculopathy was managed conservatively with medication, physical therapy and transforaminal epidural injection. She had pain relief for 3 months but again developed similar pain. After 6 months of initial treatment, she presented with severe pain on left buttock with radiating towards left lower extremity. Visual Analogue Score (VAS) was 9/10. Straight Leg Raising Test was 50 degrees with impaired sensation in S1 dermatome and diminished ankle jerk on same side. This time, she opted for surgery. Standard surgical steps of microdiscectomy were followed till nerve root was identified. Annulotomy was performed and disc materials were detached using nerve hook. Then 2 mm size pituitary rongeur was introduced in the disc space. After few attempts of removal of disc material, a click was felt while trying to catch the disc material. It was found that the tip was broken, and broken piece was retained in the disc space. It was palpable with nerve hook. So, retrieval was tried with bigger size pituitary rongeur, but it was difficult to catch it. Laminotomy size was widened, and several attempts were performed under fluoroscopy, but it migrated more anteriorly and medially. Endoscopic spine facility was not available, so urologists' assistance was sought as they were available at the site. Urologist introduced the nephroscope and tried to retrieve the broken tip but was not possible due to poor vision. Due to

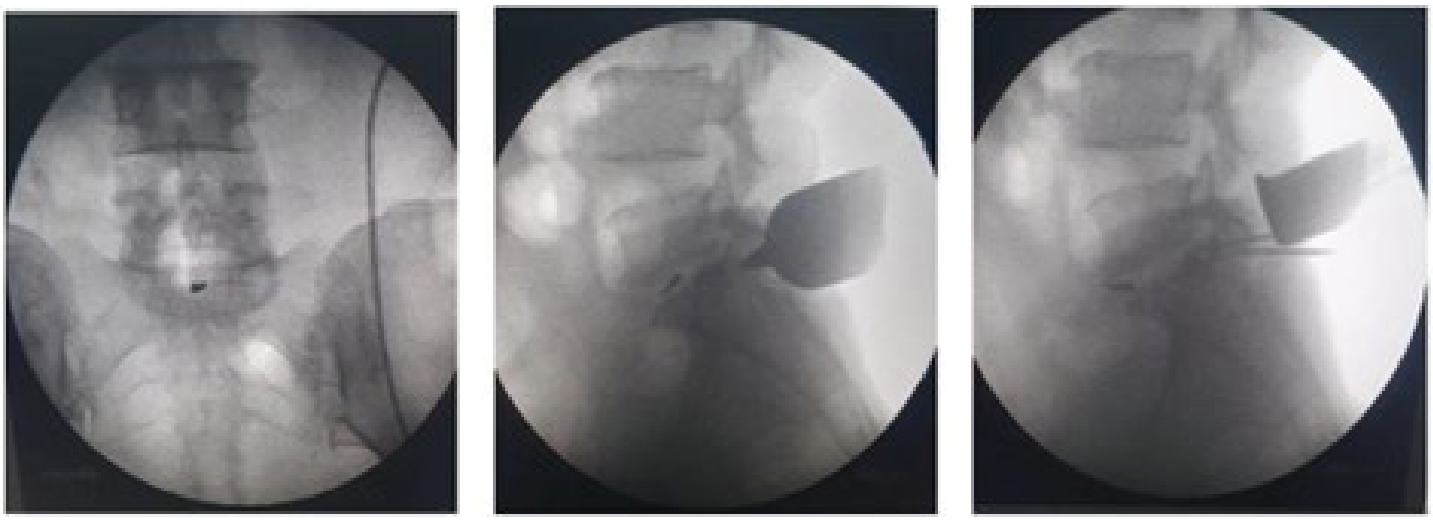

Fig. 1: Retained broken pituitary rongeur tip which migrated anteriorly while trying to remove

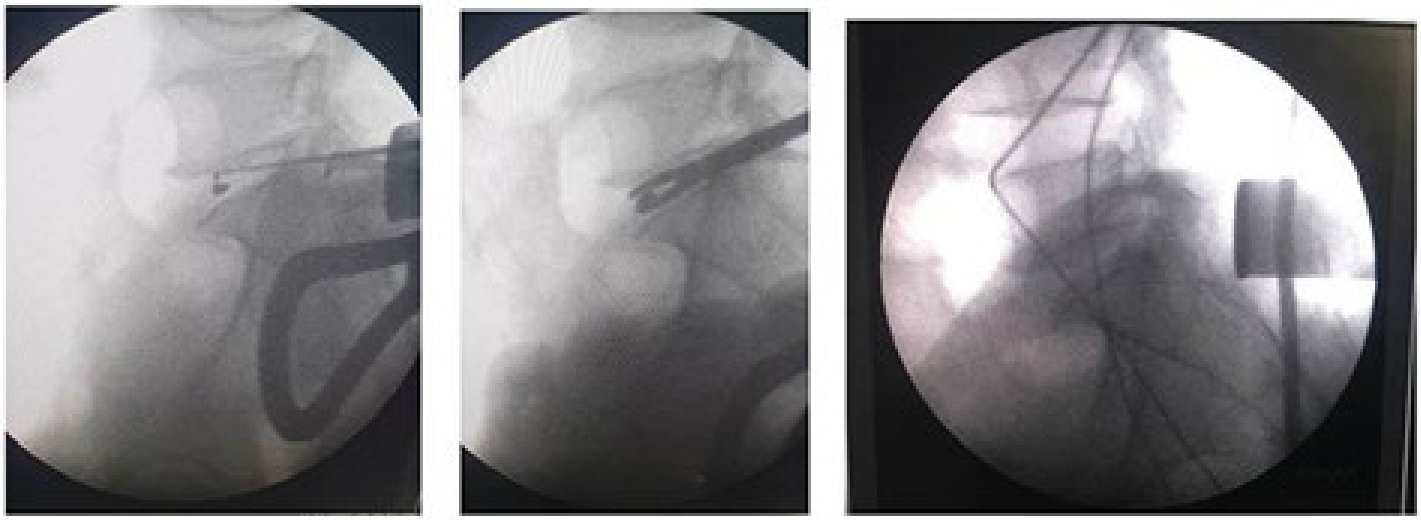

Fig. 2: Nerve hook and Bigger Pituitary rongeur used to remove the broken pituitary rongeur tip and last picture after removal

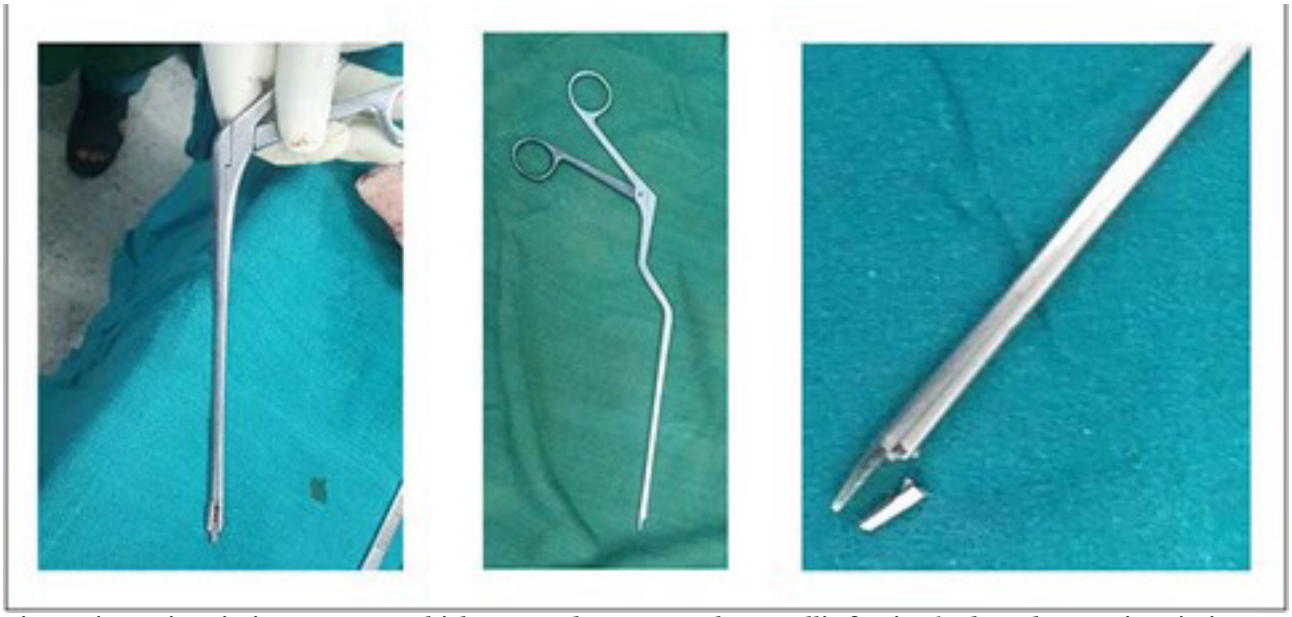

Fig. 3: Bigger size pituitary rongeur which was used to remove the metallic foreign body and 2mm size pituitary rongeur whose tip was broken

continuous irrigation and backflow of normal saline it migrated laterally and posteriorly towards the lateral recess. So, under fluoroscopy control it was retrieved by the bigger size pituitary rongeur. Wound was closed after complete decompression of the

nerve root. Intra-operative check x ray was performed, and patient relatives were explained about the complications. The patient had significant pain relief immediately after surgery. Post operative period is uneventful till 9 months after surgery.

DISCUSSION

The breakage of instruments during microdiscectomy is not a common complication. There is always debate regarding the removal of retained metallic foreign body. It increases the risk of dislodgement of the foreign body in the pelvic or abdominal cavity and spinal canal if left alone in the disc space.[5] Bydon et al reported a case report about embolization of broken pituitary rongeur from inferior vena cava that went up to the right side of heart and through the patent foramen oval to the left and was removed by sternotomy after failure to retrieve while cardiac catheterization.[6] The excessive granulation tissue formation may occur around the retained foreign body leading to nerve root compression and development of severe radiculopathy.[7] The psychological reaction of the patients and their family and possible medicolegal issues also justify the reason for removal. But the removal of the retained foreign body is not always easy. It increases the risk of nerve root injury, dural tear, infection.[5] If the retained foreign body is in the region where removal is too much risky and increases risk of tissue injury then it can be left alone.[7]

Narrow window and poor illumination are two important factors which obscure direct visualization of the retained foreign body. So narrow window should be widened increasing the size of laminotomy or by performing hemilaminectomy or complete laminectomy.[4,5,8,9] In our case also laminotomy was widened for wider corridor to reach disc space. The anterior and anterolateral corridor were preferred for the removal of intradiscal foreign bodies in past but recently extraforaminal or transforaminal route have been described as effective route.[10] Menger et al describes the algorithm for the stepwise retrieval of the foreign bodies in the case report published in which use of fluoroscopy is recommended for location.[9] In our case, initially we tried to remove the broken tip of pituitary rongeur without using fluoroscopy, but it was difficult to catch it. Then fluoroscopy was used which helped to locate it exactly, but it was difficult to catch it rather it migrated anteriorly and medially due to smaller size pituitary rongeur that was used for removal. Later, bigger size pituitary rongeur was used and broken tip was removed under fluoroscopy guidance. We recommend the use of fluoroscopy to exactly locate the foreign body.

The reason for the breakage of the instruments can be regular wear and tear, using excessive force while handling the instrument, a flaw in the instrument or improper maintenance by the operating theater personnel.[4] The instruments are reused after sterilization and repeat sterilization leads to metal fatigue increasing risk of breakage.[5] Smaller size pituitary rongeur has high risk of breakage. In most of the reported cases, 2mm size pituitary rongeur is used. The exact reason for breakage in our case is not known but may be due to improper handling of the smaller size (2mm) pituitary rongeur by the surgeon which was used several times and scrub nurse did not check the integrity of the instrument intraoperatively. All instruments should be checked properly before surgery in addition to routine quality inspection audit and more attention should be given to the instruments with joints and hinges.[4] There is inadequate information regarding the number of times instruments can be used or sterilized.[5] But we should always be careful if the same instrument is being used repeatedly.

REFERENCES

1. Price M V., Molloy S, Solan MC, Sutton A, Ricketts DM. The rate of instrument breakage during orthopaedic procedures. Int Orthop 2002;26(3):185-7. https://doi.org/10.1007/s00264-002-0344-6

2. Pichler W, Mazzurana P, Clement H, Grechenig S, Mauschitz R, Grechenig W. Frequency of instrument breakage during orthopaedic procedures and its effects on patients. J Bone Jt Surg 2008;90(12):2652-4. https://doi.org/10.2106/JBJS.H.00163

3. Shriver MF, Xie JJ, Tye EY, Rosenbaum BP, Kshettry VR, Benzel EC, et al. Lumbar microdiscectomy complication rates: A systematic review and meta-analysis. Neurosurg Focus 2015;39(4). https://doi.org/10.3171/2015.7.FOCUS15281

4. Ramachandran K, Meena J, Anand KSSV, Shetty AP, Shanmuganathan R. Breakage of a Pituitary Rongeur Tip: An Unforeseen Complication of Lumbar Microdiscectomy: A Case Report and Review of Literature. JBJS Case Connect 2023;13(1):1-5. https://doi.org/10.2106/JBJS.CC.22.00556

5. Kale S, Tokmak M, Daimoglu M. Should the Surgical Instrument Parts That Are Broken and Remain in the Distance of the Disc Be Removed? Should It Be Quit? A Case Report. Open J Mod Neurosurg 2022;12(02):97-103. https://doi.org/10.4236/ojmn.2022.122010

6. Bydon A, Xu R, Conte J V., Gokaslan ZL, Brinker JA, Witham TF, et al. Surgical mystery: Where is the missing pituitary rongeur tip? Spine (Phila Pa 1976) 2010;35(17):867-72. https://doi.org/10.1097/BRS.0b013e3181d85bec

7. Emel E, Güzey FK, Karabulut C. A foreign body due to a broken disc punch in the S1 root sleeve. Spine J 2007;7(3):380-1. https://doi.org/10.1016/j.spinee.2006.08.018

8. Matthew L, Andrew M, Mr Gerald M. Fishing in the Dark: Retrieving Broken Instruments during a Spinal Lumbar Discectomy. Adv Tech Musculoskelet Surg 2018;2(1):29-32. https://doi.org/10.36959/765/392

9. Menger RP, Lazzari Z, Nanda A. Stepwise Retrieval of a Broken Pituitary Disc Rongeur. Cureus 2020;12(6):5-11. https://doi.org/10.7759/cureus.8561

10. A R, S R, M A. Intradiscal Retained Broken Blade Of A Disc Rongeur. J Spine Neurosurg 2017;06(03):2016-8. https://doi.org/10.4172/2325-9701.1000273