ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 17, Issue, 06, pp.33233-33234, June, 2025
DOI: https://doi.org/10.24941/ijcr.49056.06.2025

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

RETAINED AND MIGRATED BROKEN AMPLATZ SHEATH DURING PCNL – A RARE INTRAOPERATIVE COMPLICATION IN A YOUNG MALE

[1,*]Dr. Ojas Potdar, [2]Dr. Amrita Patkar, [3]Dr. Akash Shah and [4]Dr. Monal Shah

[1]Consultant Urologist,Oscar Super Speciality Hospital, Goegaon, Mumbai; [2]General Surgeon; [3]Consultant Urologist and Uro-oncologist, Oscar Super speciality Hospital, Goregaon, Mumbai; [4]Consultant AnaesthetistOscar Super Speciality Hospital, Goregaon, Mumbai

ARTICLE INFO

Article History:
Received 09th March, 2025
Received in revised form
21st April, 2025
Accepted 19th May, 2025
Published online 24th June, 2025

Key words:
PCNL, Staghorn Stone
Amplatz Sheath.

**Corresponding author:*
Dr. Ojas Potdar

ABSTRACT

We present a rare and complex case of a 33-year-old male with right-sided hydronephrosis due to an obstructive distal ureteric calculus and a concurrent partial staghorn calculus in the lower calyx. While undergoing staged treatment with PCNL, the case was complicated by a fracture of the Amplatz sheath, leading to retroperitoneal migration of the broken segment. Retrieval via percutaneous access failed, necessitating open surgical exploration. An intercostal drain (ICD) was placed due to the high surgical incision. This case underscores the importance of vigilance, instrument integrity checks, and preparedness for surgical escalation in the event of rare intraoperative mechanical failures.

Citation: Dr. Ojas Potdar , Dr. Amrita Patkar , Dr. Akash Shah and Dr. Monal Shah. 2025. *"*Retained and Migrated Broken Amplatz Sheath During PCNL – A Rare Intraoperative Complication in a Young Male*.". International Journal of Current Research, 17, (06), 33233-33234.*

INTRODUCTION

Renal calculi are a common cause of urological admissions, but staghorn calculi in young adults without anatomical abnormalities or infection are rare. The coexistence of an obstructive ureteric stone with a lower calyceal partial staghorn calculus presents unique clinical challenges. Instrument-related complications during PCNL, such as Amplatz sheath fracture, are extremely uncommon but require immediate attention. This case highlights such a complex scenario and emphasizes best practices in intraoperative decision-making.

CASE PRESENTATION

A 33-year-old male presented with acute right flank pain, dysuria, and mild hematuria. CT KUB revealed moderate right hydronephrosis due to a 12 x 5 mm obstructive distal ureteric calculus just distal to the iliac crossing (HU 1400), along with a 2.0 x 1.8 cm partial staghorn calculus in the lower calyx (HU 1500). A 6 mm non-obstructive calculus was noted in the left lower calyx. Routine labs and renal function were within normal limits.

MANAGEMENT

The patient was initially treated with right ureteroscopy (URS) and DJ stenting. The obstructive distal ureteric stone was removed successfully. Four weeks later, PCNL was planned to treat the lower calyceal partial staghorn calculus. Percutaneous access was gained via the middle posterior calyx under fluoroscopic guidance and dilated to 24 Fr using Amplatz dilators. A rigid nephroscope was introduced. The stone was fragmented using a pneumatic lithoclast. During the procedure, a large stone fragment impacted within the Amplatz sheath. It was fragmented in situ with the lithoclast and extracted. Subsequently, a crescent-shaped radiopaque shadow was noted on fluoroscopy, raising suspicion of a retained foreign body.(Figure-1) Nephroscopy revealed no stone in the tract, and on removing the Amplatz sheath, a distal fracture was identified. A new puncture was made to retrieve the broken sheath, but due to its ragged edges and water irrigation pressure, the fragment migrated retroperitoneally along the muscle planes. An open surgical incision was performed, and the broken Amplatz sheath was retrieved without complications (Figure -2) Due to the high location of the incision in the supracostal region, an intercostal drain (ICD) tube was placed to ensure adequate postoperative drainage and to prevent pleural collection.

Post-operative Course: The intercostal drain (ICD) was also removed after 2 days. The DJ stent was removed after 4 weeks.

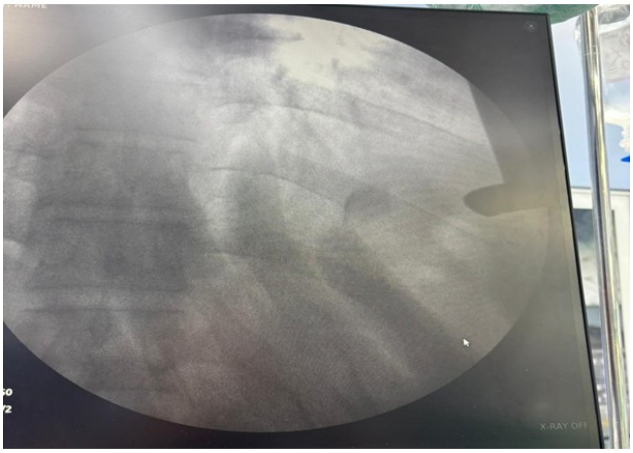

Figure 1. C-arm image showing a radiopaque crescentic shadow

Follow-up ultrasonography confirmed complete clearance of stones and no residual foreign body.

DISCUSSION

This case highlights an uncommon scenario of dual pathology in a single renal unit, managed successfully in a staged manner. Staghorn calculi are commonly associated with chronic infections and structural abnormalities.

However, this patient had no such predisposing factors, indicating possible metabolic etiology. PCNL remains the standard of care for staghorn calculi, offering high clearance rates. However, instrument-related complications like sheath fracture are exceedingly rare. Early recognition is essential. Fluoroscopy can help detect retained fragments by identifying unexpected radiopaque shadows. In this case, despite secondary percutaneous access, the broken fragment could not be retrieved due to migration along retroperitoneal planes. Prompt open exploration avoided further complications such as sepsis or long-term foreign body retention. Surgeons must maintain a high index of suspicion for equipment integrity and always inspect devices post-removal. This case underscores the importance of adaptable surgical planning and intraoperative vigilance.

CONCLUSION

Intraoperative mechanical complications, though rare, require structured management:

- Maintain high suspicion for foreign bodies when unexplained radiopaque shadows are observed.
- Inspect all instruments after removal. Attempt endoscopic retrieval first.
- Escalate to open surgery if endoscopic efforts fail, especially if the fragment migrates or poses a risk to surrounding structures. This case illustrates the value of prompt identification, multi-modal imaging, and readiness to convert to open surgery in achieving safe outcomes. This case uniquely demonstrates the risks associated with instrument fragility, particularly Amplatz sheath fracture, and highlights the critical need for backup plans including open surgical access and postoperative drain placement such as ICD insertion.

REFERENCES

1. Michel MS, Trojan L, Rassweiler JJ. Complications in percutaneous nephrolithotomy. Eur Urol. 2007;51(4):899–906.
2. Choi SW, et al. A case of broken Amplatz sheath during percutaneous nephrolithotomy. Korean J Urol. 2013;54(10):716–718.
3. Kurt HA, Demirci E. A Rare Complication of Amplatz Sheath: Amplatz Sheath Rupture During Percutaneous Nephrolithotomy. J Endourol Case Rep. 2020 Dec 29;6(4):399-401. doi: 10.1089/cren.2020.0053. PMID: 33457684; PMCID: PMC7803238.

****