

CASE REPORT

PEER REVIEWED | OPEN ACCESS

Transient flank bulge after percutaneous nephrolithotomy

Nariman Gadzhiev, Aram Aloyan, Alexandr Petrov,
Ivan Gorgotsky, Andrei Shkarupa

ABSTRACT

Introduction: Percutaneous nephrolithotomy (PCNL) is considered as the “gold standard” treatment for large (>2 cm) and complex kidney stones. We present a case of transient tone loss of the anterolateral abdominal wall, which is a rare complication after PCNL.

Case Report: A 50-year-old male with a complete staghorn stone of the right kidney underwent standard PCNL in prone position at the 11th intercostal space. On the 6th post-operative day the patient complained on painless bulge in the right flank. Computed tomography (CT) scan in supine position revealed no signs of herniation, retroperitoneal hematoma, or residual fragments. Flank bulge was attributed to the muscle tone loss either because of the 11th intercostal nerve injury by the needle or nerve compression by the Amplatz sheath. Within next six months flank bulge has completely resolved.

Conclusion: Flank bulge after PCNL although rare but possible and transient condition. Nerve injury seems to be the most likely cause.

Keywords: Complications, Flank bulge, Percutaneous nephrolithotomy, Urolithiasis

How to cite this article

Gadzhiev N, Aloyan A, Petrov A, Gorgotsky I, Shkarupa A. Transient flank bulge after percutaneous nephrolithotomy. J Case Rep Images Urol 2023;8(1):17–19.

Article ID: 100032Z15NG2023

doi: 10.5348/100032Z15NG2023CR

INTRODUCTION

Percutaneous nephrolithotomy (PCNL) has replaced open surgery and is considered as the “gold standard” treatment for large (>2 cm) and complex kidney stones [1]. A common complication of open surgery is the loss of tone of the anterolateral abdominal wall muscles due to nerve injury which looks like a flank bulge [2–5]. Although PCNL is perceived as minimally invasive option nerve injury is still a possible complication [6]. We present a case of transient tone loss of the anterolateral abdominal wall after PCNL, which has resolved spontaneously within six months.

CASE REPORT

A 50-year-old male presented with right flank pain and hematuria. Computed tomography revealed a complete staghorn stone of the right kidney. The patient underwent single tract standard PCNL in prone position at the 11th intercostal (IC) space 3 cm medial from posterior axillary line with 30° puncture angle and was sequentially dilated up to 30 Ch. Total operative time was 85 minutes and completed with nephrostomy tube 12 Fr. Early postoperative period was uneventful. The patient was discharged on the 3rd postoperative day (POD) with nephrostomy tube. However, on the 6th POD patient was readmitted with complains on painless bulge in the right

Nariman Gadzhiev¹, Aram Aloyan², Alexandr Petrov², Ivan Gorgotsky², Andrei Shkarupa³

Affiliations: ¹Deputy Director for Medical Affairs (Urology), Department of Urology, Saint-Petersburg State University Hospital, Saint-Petersburg, Russia; ²Urologist, Department of Urology, Saint-Petersburg State University Hospital, Saint-Petersburg, Russia; ³Head of Department of Urology, Department of Urology, Saint-Petersburg State University Hospital, Saint-Petersburg, Russia.

Corresponding Author: Aram Aloyan, Komendantskiy pr. 12-1-113, 197372 Saint-Petersburg, Russia; Email: dr.aramaloyan@gmail.com

Received: 05 March 2023

Accepted: 01 May 2023

Published: 19 May 2023

flank. No history of fever or pain was noted. Computed tomography scan in supine position revealed no signs of herniation, retroperitoneal hematoma, or residual fragments. Flank bulge was attributed to the muscle tone loss. The patient was discharged on the next day without any specific recommendations. Within next six months the bulge has completely resolved (Figure 1).



Figure 1: (A) Right flank before PCNL, (B) Right flank on 6th POD, (C) Right flank six months after PCNL.

DISCUSSION

In the era of endoscopy open surgery for kidney stones has become rather obsolete [7, 8]. Nerve injury during lumbotomy can lead to the muscle tone loss of the abdominal wall [2, 3]. Rarely nerves can be injured during PCNL either by direct needle hit during puncture or nerve compression between the Amplatz sheath and the rib (Figure 2). Intercostal (IC) neurovascular bundle courses mainly along the inferior margin of each rib and passes inferior from the 11th rib as it progresses lateral. Despite this, it is further from the 12th rib than from 11th one. Thus, puncture in the lower half of the IC space is potentially safer regarding IC nerve injury [6]. Up to now only three cases of flank muscle tone loss after PCNL are described in the literature [9, 10]. Two of them were performed in prone-flexed position through supracostal (12th rib) access and 12th intercostal space, respectively, to upper calyces without nephrostomy drainage [9]. Third case was performed through subcostal access to lower calyx in prone position with nephrostomy drainage after the surgery [10]. Two out of three described flank bulges have resolved on their own with time. Our case proves the transient character of the flank bulge caused by the nerve

damage during PCNL. As most flank bulges are reversible, PCNL is more likely to cause a nerve compression than a nerve transection.

CONCLUSION

Flank bulge after PCNL although rare but possible and transient condition. Nerve injury seems to be the most likely cause.

REFERENCES

1. Türk C, Petřík A, Sarica K, et al. EAU guidelines on interventional treatment for urolithiasis. *Eur Urol* 2016;69(3):475–82.
2. Gardner GP, Josephs LG, Rosca M, Rich J, Woodson J, Menzoian JO. The retroperitoneal incision. An evaluation of postoperative flank ‘bulge’. *Arch Surg* 1994;129(7):753–6.
3. Chatterjee S, Nam R, Fleshner N, Klotz L. Permanent flank bulge is a consequence of flank incision for radical nephrectomy in one half of patients. *Urol Oncol* 2004;22(1):36–9.
4. Hoffman RS, Smink DS, Noone RB, Noone RB Jr, Smink RD Jr. Surgical repair of the abdominal bulge: Correction of a complication of the flank incision for retroperitoneal surgery. *J Am Coll Surg* 2004;199(5):830–5.
5. Zhou DJ, Carlson MA. Incidence, etiology, management, and outcomes of flank hernia: Review of published data. *Hernia* 2018;22(2):353–61.
6. McAllister M, Lim K, Torrey R, Chenoweth J, Barker B, Baldwin DD. Intercostal vessels and nerves are at risk for injury during supracostal percutaneous nephrostolithotomy. *J Urol* 2011;185(1):329–34.
7. Alivizatos G, Skolarikos A. Is there still a role for open surgery in the management of renal stones? *Curr Opin Urol* 2006;16(2):106–11.
8. El-Husseiny T, Buchholz N. The role of open stone surgery. *Arab J Urol* 2012;10(3):284–8.
9. Lantz AG, Pace KT, Honey RJ. Flank bulge following supracostal percutaneous nephrolithotomy: A report of 2 cases. *Can Urol Assoc J* 2013;7(7–8):E547–9.
10. Chakraborty JN, Deb A. Flank bulge following subcostal percutaneous nephrolithotomy. *Res Rep Urol* 2018;10:195–7.

Acknowledgments

This research has received no external funding.

Author Contributions

Nariman Gadzhiev – Conception of the work, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

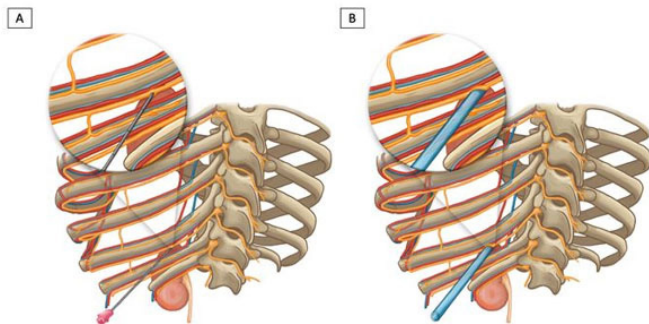


Figure 2: (A) Nerve injury by the needle during puncture, (B) Nerve compression between the Amplatz sheath and the rib.

Aram Aloyan – Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Alexandr Petrov – Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Ivan Gorgotsky – Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Andrei Shkarupa – Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission

The corresponding author is the guarantor of submission.

Source of Support

None.

Consent Statement

Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

Copyright

© 2023 Nariman Gadzhiev et al. This article is distributed under the terms of Creative Commons Attribution License which permits unrestricted use, distribution and reproduction in any medium provided the original author(s) and original publisher are properly credited. Please see the copyright policy on the journal website for more information.

Access full text article on
other devices



Access PDF of article on
other devices





INTERNATIONAL JOURNAL OF
CASE REPORTS AND IMAGES



VIDEO JOURNAL OF
CLINICAL RESEARCH



VIDEO JOURNAL OF
BIOMEDICAL SCIENCE



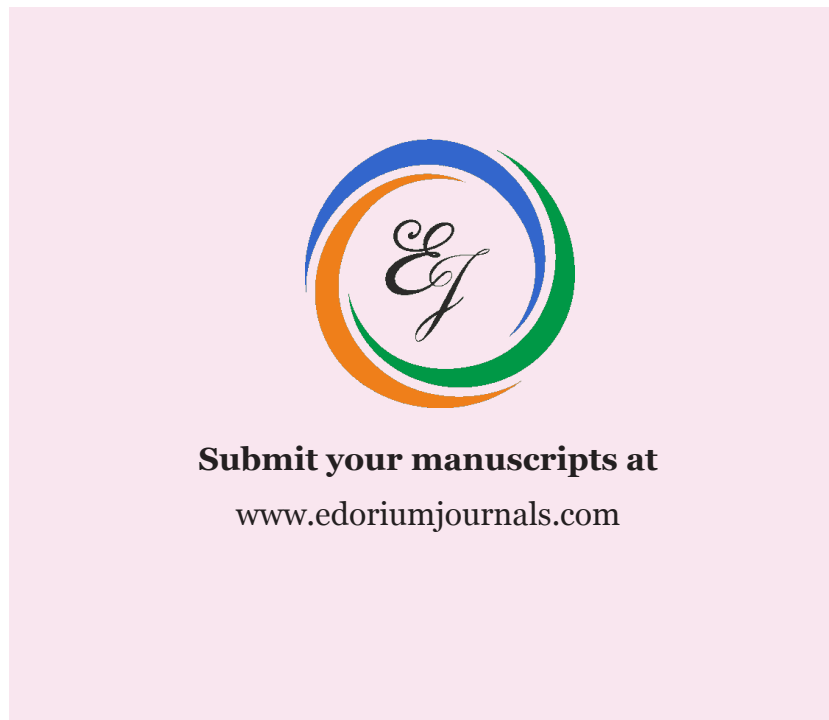
INTERNATIONAL JOURNAL OF
HEPATOBIILIARY AND
PANCREATIC DISEASES



INTERNATIONAL JOURNAL OF
BLOOD TRANSFUSION AND
IMMUNOHEMATOLOGY



EDORIUM JOURNAL OF
OPHTHALMOLOGY



EDORIUM JOURNAL OF
MEDICINE



EDORIUM JOURNAL OF
CARDIOTHORACIC AND
VASCULAR SURGERY



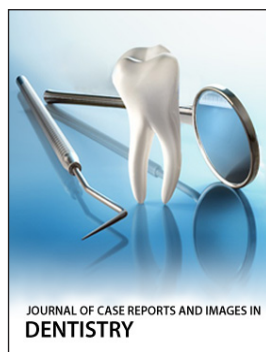
JOURNAL OF CASE REPORTS
AND IMAGES IN ORTHOPEDICS
AND RHEUMATOLOGY



EDORIUM JOURNAL OF
PSYCHOLOGY



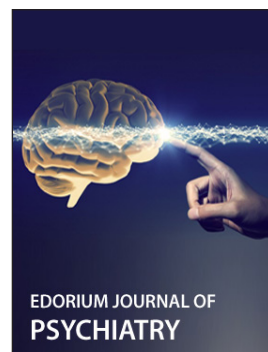
EDORIUM JOURNAL OF
CELL BIOLOGY



JOURNAL OF CASE REPORTS AND IMAGES IN
DENTISTRY



EDORIUM JOURNAL OF
CANCER



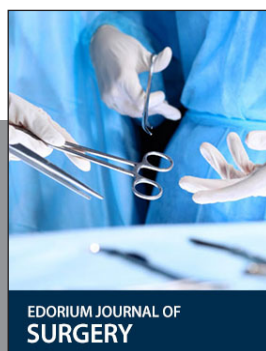
EDORIUM JOURNAL OF
PSYCHIATRY



JOURNAL OF CASE REPORTS AND
IMAGES IN INFECTIOUS DISEASES



EDORIUM JOURNAL OF
ANATOMY AND EMBRYOLOGY



EDORIUM JOURNAL OF
SURGERY



JOURNAL OF CASE REPORTS
AND IMAGES IN PATHOLOGY



EDORIUM JOURNAL OF
ANESTHESIA