CASE REPORT

Penoscrotal haematoma after cardiac catheterisation

Vivek Kumar,¹ Parita Soni,¹ Sameer Chadha,² Bilal Malik²¹Internal Medicine, Maimonides Medical Center, Brooklyn, New York, USA²Cardiology, Maimonides Medical Center, Brooklyn, New York, USA

Correspondence to

Dr Parita Soni,
sonipss14@gmail.com

Accepted 14 April 2017

SUMMARY

Scrotal haematoma is an extremely rare complication after cardiac catheterisation (CC) with only few cases reported in literature. We report a 56-year-old patient who developed large scrotal haematoma after CC via transfemoral approach requiring blood transfusion due to haemodynamic instability. After an uneventful elective procedure, he was discharged with a collagen plug-based vascular closure device (Angio-Seal). He developed sudden onset, excruciating groin pain with scrotal swelling and shock. Bleeding was stopped with manual compression over the femoral artery and 2 units of packed red blood cells were transfused. CT angiogram revealed scrotal haematoma without active bleeding. Testicular blood supply remained intact. Scrotal swelling improved with conservative management and patient got discharged 3 days later in a stable condition. The review of literature suggests that penoscrotal haematoma is unusual after CC but may result from arterial injury or bleeding into the fascial planes. Majority of patients require observation but surgery is indicated in selected cases for vascular complications.

BACKGROUND

More than 1 000 000 cardiac catheterisations (CCs) are done annually in the USA through femoral access.¹ The incidence of vascular complications varies from 0.1% to 6.1%.² In the current era, the vascular closure devices (VCDs) are widely used for haemostasis after CC to achieve early ambulation and discharge along with faster recovery after the procedure. The overall incidence of vascular complications associated with the use of VCDs ranges from 1.5% to 9%,³ out of which 20–40% of the patients require surgical intervention.⁴ Until now, only very few cases have been reported with scrotal haematoma after CC via femoral route.³ We report a patient who developed massive penoscrotal haematoma after elective CC through femoral artery due to the dislodgement of a collagen plug-based VCD (Angio-Seal device) leading to bleeding into the fascial plane.

CASE PRESENTATION

A 56-year-old man with past medical history of hypertension, hyperlipidaemia, diabetes mellitus and coronary artery disease underwent elective CC for atypical chest pain through right femoral artery. He did not have any underlying coagulopathy but he was on ticagrelor and aspirin for the drug-eluting stent (DES) that was placed 8 months ago.

He was not on any glycoprotein IIb/IIIa inhibitors. During this admission, he received a DES for 95% blockage at ostium of left anterior descending artery. Ticagrelor and aspirin were continued post-procedure. A collagen plug-based VCDic (Angio-Seal-sheath size 6 French) was deployed successfully on the first attempt in the right femoral artery for haemostasis. After an uneventful procedure, patient became ambulatory without any complaints and was discharged following a short observation period as per our standard institutional protocol.

Soon after discharge, while he was trying to get into the car, he experienced sudden onset excruciating pain over the right groin and scrotum. He was unable to sit due to pain of 10/10 intensity and preferred to lie supine. He was brought back to the observation room of the CC lab. The time duration between the last examination before the discharge of the patient and the presentation of the symptoms while he was trying to get into the car was less than 10 min. Upon readmission, his vital signs were significant for tachycardia (heart rate 112 per minute), tachypnoea (respiratory rate 22 per minute) and hypotension (blood pressure 56/41 mm Hg). Physical examination revealed a pale and ill-appearing man in distress due to groin pain and discomfort. He became more lethargic and confused. Genital examination showed new onset massive swelling over the scrotum and penis with severe tenderness (figure 1). The scrotum was warm and tense. There were no signs of active expansion, external bleeding or oozing from the access site.

He was acutely managed for possible dislodgement of VCD with continuous manual compression over the right femoral artery for 45 min. He received multiple intravenous fluid boluses along with dopamine for brief duration through the intraosseous line. Patient's initial haemoglobin/haematocrit (Hgb/Hct) was 13/38 which dropped to 11.3/33.4 due to haemodynamic collapse secondary to acute bleeding. Patient was then given 2 units of packed red blood cells (PRBCs). After 2 units of PRBCs transfusion, his Hgb/Hct improved to 12.5/36.8 and remained stable afterwards. Kidney and liver panel remained within normal limits.

Testicular ultrasound revealed large right-sided scrotal haematoma without any torsion or masses (figure 2). Doppler of testis showed intact blood supply to both the testes (figure 3). CT angiogram of the abdomen and pelvis with intravenous contrast confirmed moderate-sized haematoma anterior to the right common femoral vessels and large haematoma within the right hemiscrotum in the absence of any active bleeding (figure 4) or pseudoaneurysms.

CrossMark

To cite: Kumar V, Soni P, Chadha S, et al. *BMJ Case Rep* Published Online First: [please include Day Month Year]. doi:10.1136/bcr-2016-218934

Figure 1 Massive swelling over the scrotum and penis.

Vascular surgery advised conservative management due to the absence of any active bleeding or blood vessel injury. A scrotal sling was applied for scrotal elevation as per urology recommendations. Serial scrotal sonograms obtained for monitoring revealed decrease in the size of haematoma. Patient was discharged to home after 3 days in a stable condition.

Figure 2 Testicular ultrasonogram showing large right-sided scrotal haematoma but no torsion or masses.

Figure 3 Testicular colour Doppler showing intact blood supply to both the testes.

OUTCOME AND FOLLOW-UP

The patient was seen in the cardiology clinic after 2 weeks of discharge and he was recovering well with nearly complete resolution of haematoma with no pain over the scrotum. The swelling also decreased significantly and his scrotal size was almost similar to his baseline. He also endorsed of not having any sexual dysfunction.

DISCUSSION

Haematoma formation at the local site is a well-known complication of CC. Other major complications include arterial dissection or pseudoaneurysm, arteriovenous fistula, local site infection, thrombosis and retroperitoneal bleeding. The rate of complications is lower with transradial approach as compared with transfemoral approach.⁵ However, penoscrotal haematoma is an unusual complication and has been reported rarely.⁶ Massive penoscrotal haematoma has been reported previously in patients with bleeding disorders.⁷ It has also been reported in patients following percutaneous transluminal angioplasty,⁸ femoral artery injury after CC,⁹ rupture of the Dacron aortofemoral graft¹⁰ and following urological procedures.^{11 12}

Figure 4 CT angiogram of the abdomen and pelvis with intravenous contrast showing large haematoma within the right hemiscrotum without any signs of active bleeding.

Manual compression is usually recommended to achieve haemostasis at the vascular access site after CC.³ This usually requires prolonged period of bed rest. Various vascular compression devices (VCDs) to achieve access site haemostasis have been marketed. They allow early ambulation, discharge and faster recovery. As per standard protocol following an uneventful procedure, majority of patients are discharged after deployment of an VCD. The early ambulation is beneficial but may cause dislodgement of VCD leading to major bleeding. The superiority of VCDs over traditional mechanical compression in terms of overall incidence of access-related complications was not demonstrated in two meta-analyses.^{13 14} The VCDs were not used in the only two previously reported cases of scrotal haematoma after CC.^{6 9} It is also important to note that the chances of vascular complications are higher in case of failed VCD (deployment or dislodgement).² VCD failure chances are higher with high arterial punctures (above the inferior border of inferior epigastric artery) and atherosclerosis of common femoral artery. Certain other factors such as peripheral vascular disease, extremely obese patients and small femoral arteries (diameters 4–5 mm) can also make placement of the VCD challenging and hence can contribute to the failure of correctly placing VCD on the first attempt.¹⁵ However, in our case, the VCD was successfully deployed on the first attempt and the massive scrotal haematoma developed despite uneventful procedure.

The management of scrotal haematoma is mainly conservative, including pain relief, rest and a sling to provide scrotal support for elevation.¹⁶ Blood transfusion is required in selected cases with haemodynamic instability or major bleeding leading to significant drop in the haematocrit.¹⁷ The surgical intervention is occasionally indicated in cases with active bleeding due to the arterial injury, enlarging haematoma or compromised blood supply to testes. These cases should be monitored closely with frequent examinations and preferably with serial ultrasounds for early detection of increase in the size of haematoma warranting

surgical exploration to control the bleeding.¹⁸ The recovery is usually complete if detected timely and the source of bleeding is managed aggressively.⁷ Patients undergoing CC via transfemoral route should be educated about the possibility of this complication. They should be instructed to ambulate carefully soon after the procedure and to report back immediately for scrotal pain and swelling to prevent the catastrophic complications.

Contributors PS: conception and design of the case, drafting the manuscript, data collection, critical revision of the manuscript. VK: conception and design of the case, drafting the manuscript, critical revision of the manuscript. SC, BM: critical revision of the manuscript. This manuscript has been reviewed, refined and approved by all the authors for publication in BMJ Case Report. All the authors also certify that this material or similar material has not been and will not be submitted to or published in any other publication before its appearance in the BMJ Case Report.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

© BMJ Publishing Group Ltd (unless otherwise stated in the text of the article) 2017. All rights reserved. No commercial use is permitted unless otherwise expressly granted.

REFERENCES

- 1 Mozaffarian D, Benjamin EJ, Go AS, *et al.* Heart disease and stroke statistics-2015 update: a report from the American Heart Association. *Circulation* 2015;131:e29–322.
- 2 Vidi VD, Matheny ME, Govindarajulu US, *et al.* Vascular closure device failure in contemporary practice. *JACC Cardiovasc Interv* 2012;5:837–44.
- 3 Polavarapu HV, Reyes JM, Anioa EJ, *et al.* Massive penoscrotal hematoma and testicular ischemia from failed vascular closing device. *EJVES Extra* 2011;21:e29–e31.
- 4 Nasser TK, Mohler ER, Wilensky RL, *et al.* Peripheral vascular complications following coronary interventional procedures. *Clin Cardiol* 1995;18:609–14.
- 5 Schussler JM, Vasudevan A, von Bose LJ, *et al.* Comparative efficacy of Transradial Versus Transfemoral Approach for coronary angiography and percutaneous coronary intervention. *Am J Cardiol* 2016;118:482–8.
- 6 Thomas AA, Hedgepeth R, Sarac TP, *et al.* Massive scrotal hematoma following transfemoral cardiac catheterization. *Can J Urol* 2008;15:4020e3.
- 7 Ekeke ON, Nwauche CA. An uncommon cause of massive penoscrotal haematoma. *Niger J Med* 2004;13:64–6.
- 8 Shah J, Middleton S, Derodra J. Massive scrotal haematoma: a complication of percutaneous transluminal angioplasty. *Int J Clin Pract* 2001;55:722.
- 9 Borden TA, Rosen RT, Schwarz GR. Massive scrotal hematoma developing after transfemoral cardiac catheterization. *Am Surg* 1974;40:193e4.
- 10 Irace L, Stumpo R, Costa P, *et al.* Rupture of Dacron aorto-femoral graft. case report. *J Cardiovasc Surg* 1999;40:879–81.
- 11 Ceylan K, Yüksel Y, Hasan G, *et al.* Inguinal approach in adult hydrocele surgery: preliminary randomized study. *Adv Ther* 2006;23:159–62.
- 12 Johal NS, Nitkunan T, O'Malley K, *et al.* The two-stage repair for severe primary hypospadias. *Eur Urol* 2006;50:366–71.
- 13 Koreny M, Riedmüller E, Nikfardjam M, *et al.* Arterial puncture closing devices compared with standard manual compression after cardiac catheterization: systematic review and meta-analysis. *JAMA* 2004;291:350–7.
- 14 Nikolsky E, Mehran R, Halkin A, *et al.* Vascular complications associated with arteriotomy closure devices in patients undergoing percutaneous coronary procedures: a meta-analysis. *J Am Coll Cardiol* 2004;44:A62–A63.
- 15 Bangalore S, Vidi VD, Liu CB, *et al.* Efficacy and safety of the nitinol clip-based vascular closure device (Starclosure) for closure of common femoral arterial cannulation at or near the bifurcation: a propensity score-adjusted analysis. *J Invasive Cardiol* 2011;23:194–9.
- 16 Shah DK, Sagar J. Massive penoscrotal haematoma following inguinal hernia repair: a case report. *J Med Case Rep* 2008;2:357.
- 17 Kaur P, Basu S, Kaur G, *et al.* Transfusion protocol in trauma. *J Emerg Trauma Shock* 2011;4:103–8.
- 18 Joseph MG, O'Boyle PJ. The 'hitch-stitch' and drain technique for the prevention of inguinoscrotal haematoma following complicated inguinoscrotal surgery. *J R Coll Surg Edinb* 1989;34:104–5.

Learning points

- Scrotal haematoma is a rare complication of cardiac catheterisation through transfemoral approach and it usually resolves spontaneously with conservative measures.
- Patients may suffer significant bleeding requiring blood transfusion due to the dislodgement of vascular compression devices leading to bleeding in the fascial planes in the absence of any obvious vascular injury.
- The aggressive resuscitative measures, control of bleeding source and in few cases, emergent surgical drainage of haematoma is the key to better outcome.
- Vascular closure devices (VCDs) should be inserted with full precautions and patients should be ambulated under supervision prior to discharge, due to the risk of dislodgement of VCDs in the early postprocedure period.
- Patients should be educated about this rare complication and instructed to seek medical care immediately if they become symptomatic.

Copyright 2017 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow