



## Case Report

# Acute testicular ischaemia following aortoiliac stenting for aortoiliac occlusive disease

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### KEYWORDS

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**Abstract** Endovascular treatment is increasingly employed as the treatment for symptomatic aortoiliac occlusive disease. One of the possible complications of aortoiliac stenting is the development of emboli. We present a case of a 60-year-old patient presenting with right scrotal pain immediately following aortoiliac stenting for right common iliac, proximal external iliac and proximal internal iliac arteries thrombosis. He was found to have testicular ischaemia with absent blood flow on duplex ultrasonography. The patient was managed expectantly and reduced blood flow spontaneously returned to the testis over the next few weeks. © 2019 Editorial Office of Asian Journal of Urology. Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

Endovascular treatment is increasingly employed as the treatment for symptomatic aortoiliac occlusive disease. Percutaneous transluminal angioplasty with or without stenting is associated with less complication rates and shorter hospitalisation stay when compared to open surgery [1]. One of the possible complications of aortoiliac stenting is the development of emboli. There are currently no

reported cases of acute testicular ischaemia following aortoiliac stenting for occlusive disease although four cases of testicular infarction following endovascular aneurysm repair (EVAR) of abdominal aortic aneurysms (AAA) have been published [2–5]. We present a case of acute testicular ischaemia following aortoiliac stenting for right common iliac, proximal external iliac and proximal internal iliac arteries thrombosis.

## 2. Case report

A 60-year-old man with a 20-pack-year smoking history presented with right lower limb claudication. Consent was obtained from the patient to write this report. Computed tomography (CT) angiography showed extensive

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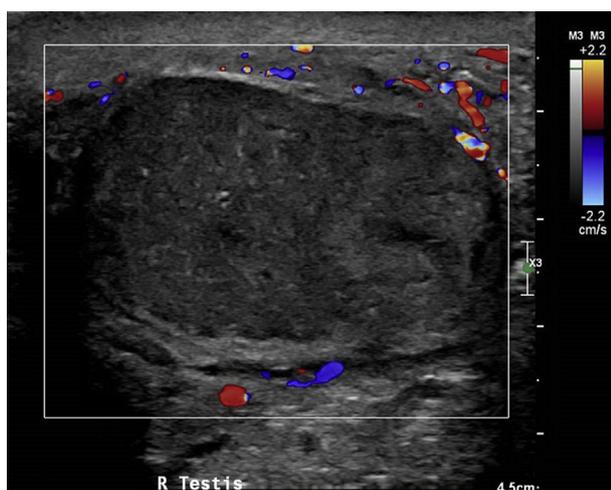
**Figure 1** Ultrasonic imaging of right testis showing absence of blood flow on postoperative Day 1.

arteriosclerotic plaques in the infra-renal abdominal aorta with total occlusion of the right common iliac, proximal external iliac and proximal internal iliac arteries. The blood supply to the right lower limb was reconstituted by the right inferior epigastric artery.

He underwent an elective endovascular treatment and a covered endovascular reconstruction of aortic bifurcation was performed. The stents were inserted into the lower aorta, the right common iliac and left common iliac arteries. Compression dressing was applied over both groin puncture sites following the procedure. The patient was continued on oral aspirin and clopidogrel antiplatelet treatment in the ward.

The patient experienced right groin and scrotal pain upon awakening from the general anaesthesia but he initially attributed it to the pressure from the compression dressing. The pain gradually increased in intensity and was not relieved when the compression bandage was removed the following morning. Urgent urology consult was obtained in view of the pain on the first postoperative day.

Duplex ultrasonography showed a slightly heterogeneous right testis with no flow seen within it (Fig. 1).



**Figure 2** Ultrasonic imaging showing interval heterogeneity and absent blood flow of right testis on postoperative Day 3.

CT aortogram showed that the aortoiliac stent was patent, and the proximal right internal iliac artery remained completely occluded, with reconstitution of flow distally. Both testicular arteries were demonstrated to have opacified proximal portions. The radiologist was unable to comment on the patency of the distal portions of the testicular arteries due to their small calibres.

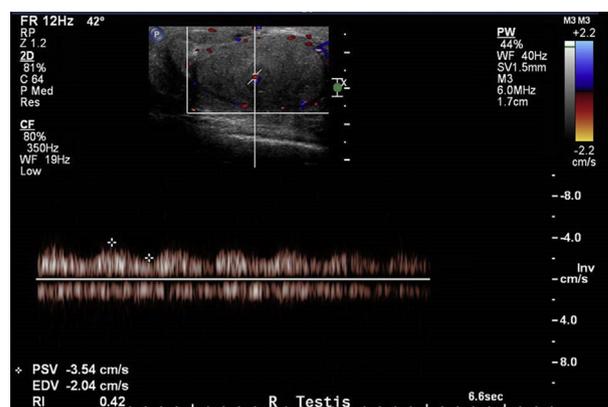
After discussion with the patient, scrotal exploration was performed on the same day to exclude the unlikely event of torsion and to keep in view an orchiectomy for the infarcted testis. The operative findings were that of a mottled right testis with prominent thrombosed vessels visible just beneath the tunica albuginea. As some parts of the testis still appeared viable and as bleeding was noted upon incision of the tunica albuginea, the decision was made not to proceed with a right orchiectomy. This possibility had been discussed with the patient before surgery with the understanding that orchiectomy may eventually be needed should the patient develop any complications from necrosis.

Repeat duplex ultrasonography performed 2 days following the scrotal exploration showed interval heterogeneity of the right testicular parenchyma with absence of parenchymal vascularity (Fig. 2). The patient was discharged as his pain had been relieved.

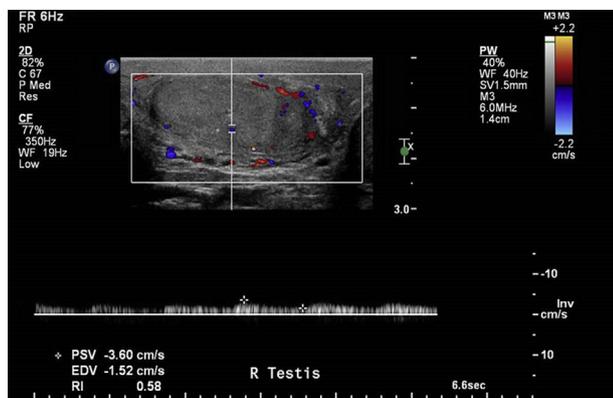
On the subsequent duplex ultrasonography performed 2 weeks later, colour flow was seen within the right testicle although it was slightly reduced compared with the left, and the right testicle remained mildly heterogeneous compared with the left (Fig. 3). A fourth duplex ultrasonography performed 1 month later showed similar findings (Fig. 4). The right testis had a slightly reduced volume with more pronounced heterogeneous echoes in the lower pole, probably due to interval infarct. There was colour flow noted within the right testis but it was reduced compared to the left. The patient remained asymptomatic.

### 3. Discussion

The testis is supplied by centripetal branches arising from the testicular artery. Three main sites of division and various patterns of testicular artery termination have been described. These branches have been described, by various authors, to penetrate deeply into the substance of the testis through the surface. Other authors have described



**Figure 3** Ultrasonic imaging showing return of colour flow within right testis after 2 weeks.



**Figure 4** Ultrasonic imaging showing persistent reduced blood flow within right testis after 1 month.

the testicular artery entering the testis through the mediastinum.

Mostafa et al. [6] demonstrated that the testis has its arterial supply mainly from the testicular artery supplemented with both the cremasteric artery and artery of the vas deferens.

The artery of the vas deferens arises from the inferior vesical artery which itself is a branch of the internal iliac artery. The cremasteric artery arises from the inferior epigastric artery. The branches of the cremasteric artery terminate close to the lower end of the testis and anastomose with varying branches of the testicular artery.

Four cases of testicular infarction following EVAR have been reported. The causes have been postulated to be thrombus formation, graft migration and thromboembolism [2].

Thomas et al. [3] had reported a case in which a patient developed left colonic ischaemia and left testicular ischaemia following EVAR for an infrarenal AAA. The cause was assumed to be microembolization into his left hypogastric artery and a left orchietomy was performed as the testis and epididymis was found to be completely infarcted.

In the case reported by McKenna et al. [4], the patient underwent an emergency left orchietomy for an infarcted left testis which presented 6 weeks after coil embolization of the ipsilateral internal iliac artery followed by EVAR for his infrarenal AAA. The histology report confirmed that the left testis was necrotic secondary to a thrombus in the testicular artery. In this case, collateral flow was insufficient to prevent infarction after endovascular exclusion of the testicular artery, and artery to the vas deferens and cremaster muscle.

Finnerty et al. [2] reported a case in which a patient developed testicular pain within 24 h of EVAR. He was found to have a mildly enlarged right testicle with decreased echogenicity and decreased blood flow on ultrasonic imaging. It was concluded that the testicular ischaemia was a complication of EVAR from a thromboembolism from the hypogastric artery into the testicular artery or reduced blood flow from the graft itself. The patient was managed conservatively and repeat ultrasonography showed stable blood flow.

Hall et al. [5] reported a case in which a patient developed left testicular pain 6 days following EVAR for his infrarenal AAA. Testicular ischaemia was confirmed

on ultrasound. The patient declined orchietomy and the follow-up ultrasonography at 6 months showed a completely infarcted testicle. Retrospective review of the preoperative imaging revealed the left gonadal artery arising from the aneurysmal neck. The authors hypothesized that absence of adequate contralateral iliac blood flow and possibly delayed or evolving occlusion of collateral vessels to the testicle led to the delayed presentation.

In this case, the CT aortogram excluded graft migration and demonstrated patency of the proximal part of the right testicular artery. We suspect that the cause of the testicular ischaemia may have been thromboembolism into the right testicular artery. In the immediate postoperative period, the compression dressing over the groin may have temporarily occluded the collateral flow from the inferior epigastric artery leading to absence of flow on the initial duplex ultrasonography. The flow subsequently returned after the removal of the dressing.

## 4. Conclusion

Testicular ischaemia is a rare complication of endovascular treatment of aortoiliac occlusive disease. Viability of the testis would be dependent on collateral blood supply. Patients should be counselled on the possible risk of testicular infarct prior to the endovascular procedure.

## Author contributions

*Study concept and design:* Li-Tsa Koh.

*Data acquisition:* Li-Tsa Koh.

*Data analysis:* Li-Tsa Koh.

*Drafting of manuscript:* Li-Tsa Koh, Kiat Huat Ooi.

*Critical revision of the manuscript:* Foo Cheong Ng.

## Conflicts of interest

The authors declare no conflict of interest.

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