



# Endovascular Treatment of a Blunt Trauma which Caused Massive Perineoscrotal Haematoma in a Child

## CASE REPORT

Nihat Karakoyunlu<sup>1</sup>, Mahir Yıldırım<sup>2</sup>, Hikmet Topaloğlu<sup>1</sup>, Uğur Özok<sup>1</sup>, Levent Sağnak<sup>1</sup>, Hamit Ersoy<sup>1,3</sup>

## ABSTRACT

Urethral injuries are primarily suggested in patients who are presented at the emergency service with straddle trauma. In addition, perineal vascular injuries are rarely observed in such traumas. In the literature, perineal, vascular injuries have been reported with high-flow priapism in many cases. We will present a treatment for a pure pudendal artery that disturbs hemodynamics. This technique is based on endovascular technique with minimal invasion in pediatric male patients who have followed a fall accompanied neither with urethral injury nor with priapism and those who could not have been controlled with conservative treatment but have a massive hemorrhage, which cannot be controlled with conservative treatment.

Keywords: Blunt trauma, embolization, pudendal artery

## INTRODUCTION

In association with blunt pelvic and perineal traumas, which constitute a major part of emergency urological cases, vulvar hematomas in women, and perineoscrotal hematomas in men can occur (1). These hematomas can be seen during urethral injuries and priapism in the aforementioned cases.

Non-invasive diagnostic imaging techniques, including superficial tissue ultrasound, can be useful for this issue. In addition, angiographic procedures that are minimally invasive in terms of both diagnosis and treatment can be helpful (2). In this study, the use of endovascular therapies, which have not been reported previously for priapism treatment of children with hemostasis is presented.

## CASE REPORT

A 9-year-old male patient fell over an iron stick in a straddling position in the playground and was admitted to the emergency department 2 h after the accident. Physical examination revealed edema in his scrotum and ecchymosis extending up to perineum (Figure 1).

In the ultrasonography, it was detected that the testicles were intact; however, apparent hematoma was observed in his left hemi-scrotum. The patient was able to urinate spontaneously and no urethral injury was observed in the retrograde urethrography.

On admission, hemoglobin level of the patient was 12.3 mg/dL and he was admitted to the hospital for monitoring, and cold compression and compression dressing were implemented. In the followup examinations conducted at the post-traumatic 4<sup>th</sup> and 6<sup>th</sup> hours, the values of hemoglobin were found to be 9.3 mg/dL and 9 mg/dL, respectively. When hematoma increased remarkably, the patient urgently underwent ultrasonography at the post-traumatic 6<sup>th</sup> hour. Next, it was decided to perform angiography immediately due to the presence of pseudoaneurysm structure in the perineal artery in color Doppler scanning, sudden decrease in hemoglobin level, and deterioration in general condition. After verbal and written informed consent was obtained from the parents of the patient, the right main femoral artery was anesthetized. Because the lesion may have multi-supply and vascular variations, terminal aortogram, pelvic angiogram, and bilateral internal iliac angiography were applied for investigating them. A perforated branch of internal pudendal artery and pathological contrast consistent with active extravasation of the scrotum were observed (Figure 2a).

In angiograms, the left internal iliac artery was selectively shown with 4F cobra catheter. Then, a microcatheter (Echelon 10, ev3) was advanced through it and distal branches with active extravasation were selectively shown. These branches with active extravasation were selectively embolized with 1.5 mm × 2 cm, 2 mm × 3 cm, and 3 mm × 4 cm coils (Axium 10, ev3). In the control angiogram, it was observed that apparently distal blood flow

<sup>1</sup>Department of Urology, Dışkapı Beyazıt Training and Research Hospital, Ankara, Turkey

<sup>2</sup>Department of Radiology, Dışkapı Beyazıt Training and Research Hospital, Ankara, Turkey

<sup>3</sup>Department of Urology, Hitit University Faculty of Medicine, Çorum, Turkey

Submitted  
25.12.2013

Accepted  
24.02.2014

## Correspondance

Dr. Nihat Karakoyunlu,  
Dışkapı Eğitim ve Araştırma  
Hastanesi, Üroloji Kliniği,  
Ankara, Türkiye  
Phone: +90 532 474 71 34  
e.mail:  
nkarakoyunlu@gmail.com



**Figure 1. Perineal hematoma before embolization**

slowed down. The process ended when no extravasation was available (Figure 2b).

After superselective coil embolization, decrease in hemoglobin level was not observed from the postoperative 2<sup>nd</sup> hour. Moreover, it was seen that ecchymoses began to fade away on the postoperative 4<sup>th</sup> day (Figure 3).

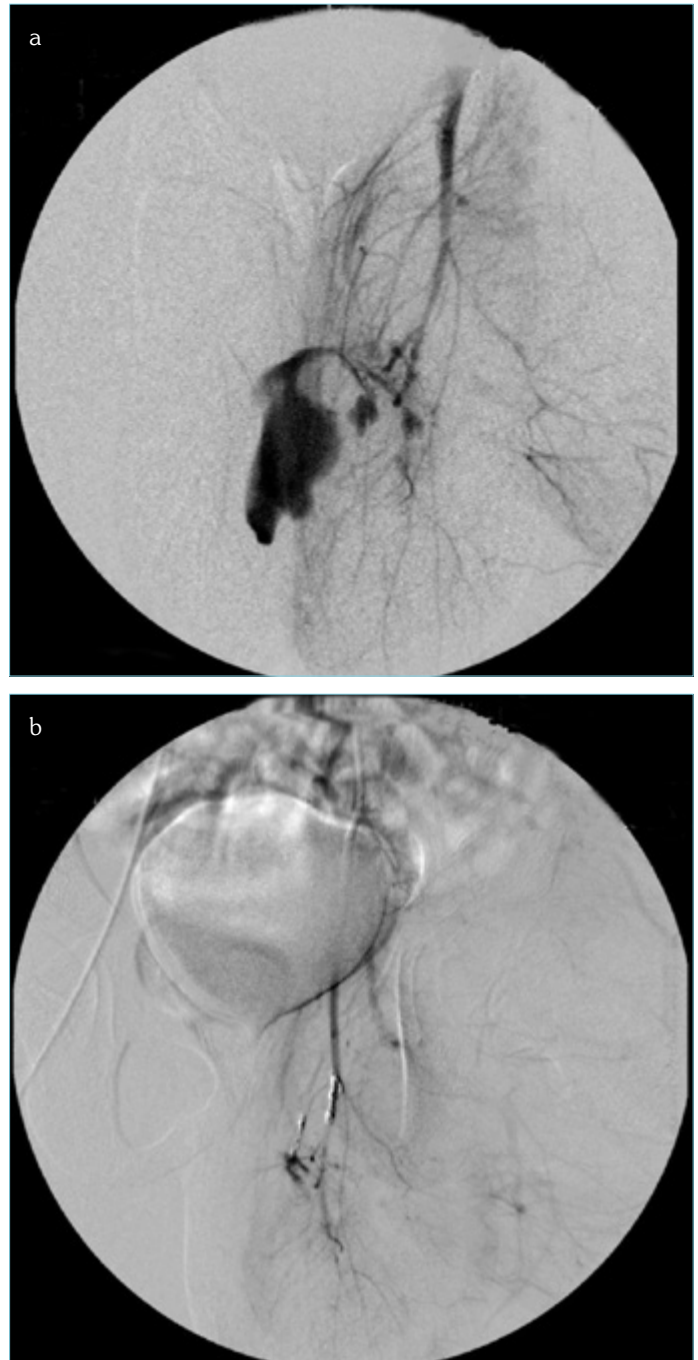
The patient was discharged from the hospital on the postoperative 5<sup>th</sup> day. No complication was detected in the 3<sup>rd</sup> and 6<sup>th</sup> followup examinations of the patient.

## DISCUSSION

External genital organs are the regions having rich vascularization with internal and external pudendal arteries. As a result of bleeding of vascular structures surrounded by Colles' fascia after a blunt trauma, hematoma extending from the perineum, scrotum, or vulva to suprapubic regions occurs (1).

If trauma occurs at the straddling position, it is generally a self-limiting process and can be accompanied by urethral injury and/or high-flow priapism. After evaluating whether the urethra has been injured or not, the patient can be followed up with cold compressive dressing and rest in conservative treatment. In cases with impaired hemodynamics, it may be necessary to provide hemostasis after finding perforated vein with open surgery or angiography (2).

Diagnosis algorithm should begin from the less invasive clinical features of patient as far as possible. In our case, physical examination, superficial ultrasonography, and Doppler were performed. Because computed tomographic angiography included unnecessary radiation, it was not used. Moreover, magnetic resonance angiography was not performed because of it being a slow procedure. More importantly, because clinical findings impaired hemodynamics and definition of pseudoaneurysm was conducted through Doppler, selective angiography alternative, which provides opportunity for both diagnosis and treatment, was chosen.



**Figure 2. Angiography before (a) and after (b) embolization**

The success rate of embolization is between 85% and 100%. However, post-procedure complication rate is 6%–7%. In addition, minor complications such as inguinal pain, insertion site infection, and guidewire perforation, major complications including bladder wall necrosis and uterine necrosis or vesicovaginal fistula in females can develop (1, 3).

In such cases, if there is a chance for the prevention of the artery, temporary embolization can be performed using the patient's own thrombosed blood or spongostan. However, in our case, permanent embolization was required because the distal branch of the artery completely disappeared. The agents used for permanent



**Figure 3.** The perineum on the 4<sup>th</sup> day after embolization

embolization include PVA, glue (cyanoacrylate) or coil. We decided to perform coil embolization considering the agents that we had.

It has been reported that deep vein thrombosis can occur in lower extremity in association with the compression of hematoma in the groin and it can resorb itself with anticoagulation (3).

According to literature, transarterial embolization technique that has been used since 1980 is usually performed in vulvar hematoma cases in traumas (1). Apart from that, a few studies about its use in lower extremity arterial injuries and high-flow priapism cases are available (3, 4). However, the practice of this technique in children having bleeding has not been reported in literature.

Following this type of traumas, symptoms can occur in acute period and also signs such as shunt or pseudoaneurysm can be observed in subacute period. In all these conditions, additional treatment may be needed (5).

This case is the first in literature for the patient being a child, the presence of bleeding that was life-threatening, and endovascular

treatment of hemorrhage without any need for a surgical procedure.

## CONCLUSION

Although accidents happening while playing in the childhood generally do not require serious treatment, they can cause severe hemorrhage that can impair hemodynamics in a few cases. It should be remembered that selective angiography is a reliable and effective choice for diagnosis and treatment of these cases.

**Informed Consent:** Written informed consent was obtained from the parents of the patient.

**Peer-review:** Externally peer-reviewed.

**Authors' Contributions:** Conceived and designed the experiments or case: NK. Performed the experiments or case: MY, HT, UÖ. Analyzed the data: HE. Wrote the paper: LS. All authors read and approved the final manuscript.

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** The authors declared that this study has received no financial support.

## REFERENCES

1. Kunishima K, Takao H, Kato N, Inoh S, Ohtomo K. Transarterial embolization of a nonpuerperal traumatic vulvar hematoma. *Radiat Med* 2008; 26(3): 168-70. [\[CrossRef\]](#)
2. Tisnado J, Beachley MC, Cho SR, Coyne SS. Transcatheter embolization of the internal pudendal artery for control of massive perineal bleeding. *Cardiovasc Intervent Radiol*. 1980; 3(3):187-9. [\[CrossRef\]](#)
3. Mavili E, Donmez H, Ozcan N, Akcali Y. Endovascular treatment of lower limb penetrating arterial traumas. *Cardiovasc Intervent Radiol* 2007; 30(6): 1124-9. [\[CrossRef\]](#)
4. Görich J, Ermis C, Krämer SC, Fleiter T, Wisianowsky C, Basche S. Interventional treatment of traumatic priapism. *J Endovasc Ther* 2002; 9(5): 614-7. [\[CrossRef\]](#)
5. Hanash KA, Al-Shammari M, Mokhtar AA, Al-Ghamdi A. Posttraumatic pseudoaneurysm of the pudendal artery successfully managed with embolization. *J Urol* 2002; 168(4 Pt 1): 1498-9. [\[CrossRef\]](#)