Post-Traumatic High-Flow Priapism Treated with Gelatin Sponge Embolization: A Case Report

Abstract

A 41-year-old male presented with a one week of ongoing priapism subsequent to an injury in a traffic accident (blunt perineal trauma). A selective arteriography of the right internal pudendal artery demonstrated an arterio-corporal fistula. A 2.8 French (2.8 Fr.) Renegade Microcatheter (Boston Scientific) was advanced proximal to the fistula over a 0.014 flexible guidewire. The fistula was then embolized with a gelatin sponge (gelfoam). Post embolization showed the closure of the fistula and significant detumescence. At 12 weeks later: there was no recurrence of priapism and the patient reported normal erectile function. Transarterial embolization appears to be a safe and effective treatment for managing patients with high-flow priapism.

Case Report

A 41-year-old patient was referred to us from another hospital. He presented with priapism caused by previous perineal trauma. An urologist from the previous hospital consulted us for arteriography. The cavernous blood gas analysis was in keeping with arterial blood. The initial management involved pressure dressing for one week, but release of pressure caused immediate recurrence of priapism, typical of high-flow category.

Prior to the angiogram, a Foley catheter is placed. The patient was subsequently subjected to angiography under local anesthesia, the right femoral artery was punctured, and a 4 Fr. Cobra catheter was introduced through a 5 Fr. sheath. (The 5 Fr. Cobra catheter was out of stock at the time of the procedure).
The pelvic angiogram was performed in the antero-posterior projection and both obliques are obtained with the catheter at the aortic bifurcation to exclude correctable inflow disease of the common and internal iliac arteries. Selective internal pudendal arteriography is performed. The left internal pudendal artery angiogram showed no abnormality (Figure 1).

A Waltman loop is used to select the ipsilateral internal pudendal artery. The right internal pudendal angiogram shows extremely dense bulbar stain with shunting into the corpora. (Figure 2-3.)

A Curved-tip Microcatheter was advanced coaxially proximal to the fistula over a 0.014 flexible guide wire, but this was not successful. Several attempts were not successful. This was caused by the dislodgement of the Waltman loop: possibly due to the very sharp angle of the aortic bifurcation and the small size of the coaxial catheter. (4 Fr. Cobra) So, a new schedule for the angiogram was set, and the approach via the left femoral artery was undertaken.

Two days later, the patient still had priapism, so an angiogram was performed via the left femoral artery approach. A 5 Fr. Cobra catheter was used for the right internal pudendal angiogram. A Curved-tip Microcatheter was used for super selective examination. The defect was occluded using gelfoam. Improvement was reached with the closure of the fistula at the angiography check showed significant detumescence. He was kept in the hospital for 48 hours under observation after the procedure, and no complication occurred (Figure 4, Figure 5-6).

Figure 1: Selective angiogram of the left internal pudendal artery in right anterior oblique view appears unremarkable.

Figure 2-3: Selective angiogram of the right internal pudendal artery in left anterior oblique view shows blood pooling in the cavernosum secondary to arterio-corporal fistula. (see arrow).

Figure 4: During gelatin sponge embolization. The gelatin sponge is impacted in the corpus cavernosum (see arrow).
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Discussion

Priapism is a prolonged unwanted erection in the absence of sexual stimulation, and is classified as either low-flow or high-flow. The most common low-flow priapism is due to veno-occlusion: these are painful rigid erections and need emergency treatment with penile drainage to prevent permanent damage. High-flow priapism is less common, and is usually caused by blunt trauma, resulting in a traumatic fistula into the corpus cavernosum. As this is a painless erection, management of high-flow priapism includes conservative methods, selective embolization and surgery. Conservative methods include observation, mechanical compression, penile cooling, puncture of corpora cavernosa with blood aspiration, and intracavernosal pharmacotherapy. However both conservative treatment and surgery are associated with a high risk of erectile dysfunction. Selective arterial embolization is firmly established as the treatment of choice in high-flow priapism. The gold standard of super selective arterial embolization therapy is to temporarily interrupt the arterial blood flow feeding the fistula for enough time to allow the injury site to heal without permanently jeopardizing penile erectile function. Embolization can be done using either resorbable (blood clot and gelfoam) or non-resorbable (coil or microballoons) materials. The majority of priapism cases reported in medical literature have been done using resorbable material. Overall success rates with embolization are high, with very few complications. (Table 1)

Conclusion

Selective arterial embolization is a minimally invasive procedure; fistulae can be sealed without damage to surrounding healthy tissue or nerves, there is less morbidity, shorter hospitalization times and the recovery period is much faster.

Table 1: Review of high-flow priapism treated with percutaneous embolization.

<table>
<thead>
<tr>
<th>Study No.</th>
<th>Year/Ref</th>
<th>Patients (n)</th>
<th>Age (years)</th>
<th>Embolization Material</th>
<th>Detumescence</th>
<th>Mean FU (months)</th>
<th>Erection</th>
<th>Complication</th>
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<tr>
<td>1</td>
<td>1998⁵</td>
<td>1</td>
<td>6</td>
<td>Microcoil</td>
<td>yes</td>
<td>-</td>
<td>Present</td>
<td>nil</td>
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<tr>
<td>2</td>
<td>1998⁶</td>
<td>1</td>
<td>10</td>
<td>Microcoil</td>
<td>yes</td>
<td>-</td>
<td>Present</td>
<td>nil</td>
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<tr>
<td>3</td>
<td>2007⁷</td>
<td>27</td>
<td>6-67</td>
<td>Clot/Gel Foam</td>
<td>yes</td>
<td>13.0 + 15.3</td>
<td>Present (n =21)</td>
<td>Erectile dysfunction in 6 pts and recurrence of priapism in 2 pts</td>
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<tr>
<td>4</td>
<td>2008⁷</td>
<td>8</td>
<td>22-59</td>
<td>Gel Foam/Microcoils</td>
<td>yes</td>
<td>18.3 + 18.8</td>
<td>Absent (n =6)</td>
<td>Erectile dysfunction and recurrence of priapism in 2 pts treated with gel foam</td>
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<tr>
<td>5</td>
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<td>3</td>
<td>4-14</td>
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<td>3.0 + 2.0</td>
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<td>2002⁹</td>
<td>6</td>
<td>6-37</td>
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<td>yes</td>
<td>11.8 + 6.7</td>
<td>Present</td>
<td>recurrence of priapism in 2 pts treated with gel foam</td>
</tr>
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FU = follow-up, pts = patients
References