Preoperative manual detorsion of the spermatic cord with Doppler ultrasound monitoring in patients with intravaginal acute testicular torsion

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Abstract  Objective. To assess the effectiveness of preoperative manual detorsion in acute testicular torsion.

Materials and methods. Between June 1998 and March 1999, seven patients presenting with testicular torsion underwent manual manipulation under US monitoring in order to restore the flow to the testis prior to surgery (orchidopexy). All detorsions were lateral in direction. The success of the manoeuvre was assessed both clinically and sonographically and confirmed at surgery.

Results. Six manoeuvres were successful in restoring flow to the testis. The failed attempt in the seventh patient was due to failure to manipulate beyond an initial 1 1/2 rotations (540°).

Conclusions. Preoperative detorsion is the fastest way to relieve testicular ischaemia. However, manual detorsion of the spermatic cord is not a substitute for surgical exploration and bilateral orchidopexy is still necessary.

Introduction

Intravaginal testicular torsion is the most dramatic cause of acute scrotum in adolescents and young adults. The viability of the torsed testis depends on the duration of the torsion. The aim of emergency surgical exploration with intraoperative detorsion is to alleviate testicular ischaemia and prevent subsequent atrophy. Because access to the operating room can be delayed for 1 h or more, we wish to emphasize in this report the usefulness of preoperative manual detorsion of the spermatic cord as a method for immediate restoration of blood flow.

Materials and methods

Between July 1998 and March 1999, eight intravaginal testicular torsions were seen in Hôpital Sainte-Justine, Montreal, Canada. Cases of extravaginal torsion occurring in newborns and infants were excluded from the study. Ages ranged from 14 to 151/2 years.

The diagnosis of testicular torsion was made clinically and sonographically. In all cases, complete absence of testicular arterial flow was documented by colour Doppler ultrasound (CDU). In one patient (case 8), the testis was already necrotic at presentation due to a 72-h torsion. In the other seven patients, manual detorsion was attempted. Detorsion was performed in the ultrasound suite immediately after the diagnosis had been confirmed by the lack of testicular perfusion at CDU.

Sedation was not used. Various operators performed the detorsion manoeuvre: a surgical resident (cases 1 and 2), three surgical fellows (cases 3, 4 and 6), a staff radiologist (case 5) and a staff surgeon (case 7). All detorsions were lateral in direction, toward the respective outer thigh, in increments of 360°–540° (1–1 1/2 rotations) and monitored by CDU. The complete lack of resistance during detorsion is important as a valuable indicator of the proper direction of the manoeuvre.

Successful detorsion was recognized by the immediate relief of pain, elongation of the cord (testicular mobility) and the restoration of perfusion at CDU. All cases underwent subsequent surgery and bilateral orchidopexy.
Results

These are summarized in Table 1. Six of seven manoeuvres were successful in restoring flow to the testis. The failure (case 7) was managed by a member of the surgical staff who did not follow the detorsion protocol and did not pursue the attempt beyond the initial 540°. Detorsion was completed operatively with an additional 540°.

Cases 1 and 5 are illustrated in Figs. 1 and 2. Surgery confirmed detorsion in cases 1–6. According to the surgical findings, it is likely that the testis would not have been salvaged in case 5 without the immediate benefit of detorsion.

Discussion

Manual detorsion is an old [1], well-documented [2–16], effective (Table 2) and safe technique that is, surprisingly, not performed routinely in children’s hospitals. It is alluded to in some textbooks [17–19] and already addressed specifically in a paediatric series [9]. Our results confirm the efficiency and usefulness of pre-operative manipulation of the torsed spermatic cord.

Experimentally, complete occlusion of arterial inflow occurred in a canine model at 450°–540° of torsion [20]. The viability of the torsed testis is then in direct relation to the duration of torsion; restoration of flow within 6 h post-torsion is associated with an extremely high chance of maintaining testicular viability (97–100%). The likelihood of viability decreases rapidly as time goes by – approximately 57% between 7 and 12 h, 35% between 13 and 24 h, and close to 0 after 24 h [16, 21, 22].

Sonographically, hypoechoic or inhomogeneous testes have been shown to be nonviable at surgery [16]. Case 5 (Fig. 2) was very close to confirming the latter correlation. An anatomical predisposition, the ‘bell-

Table 1 Intravaginal testicular torsion and manual detorsion

<table>
<thead>
<tr>
<th>Case</th>
<th>Age (years)</th>
<th>Side</th>
<th>Timing US (hours)</th>
<th>Manual detorsion</th>
<th>Restoration of flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15</td>
<td>R</td>
<td>1</td>
<td>Lateral, 2 rotations</td>
<td>+++ Immediate</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>R</td>
<td>2</td>
<td>Lateral, 2 rotations</td>
<td>+++ Progressive</td>
</tr>
<tr>
<td>3</td>
<td>14 1/2</td>
<td>L</td>
<td>4 1/2</td>
<td>Lateral, 1 1/2 rotation</td>
<td>+++ Progressive</td>
</tr>
<tr>
<td>4</td>
<td>14</td>
<td>L</td>
<td>2 3/4</td>
<td>Lateral, 2 rotations</td>
<td>+++ Immediate</td>
</tr>
<tr>
<td>5</td>
<td>15</td>
<td>L</td>
<td>5 3/4</td>
<td>Lateral, 2 rotations</td>
<td>+++ Immediate</td>
</tr>
<tr>
<td>6</td>
<td>14</td>
<td>L</td>
<td>2</td>
<td>Lateral, 1 1/2 rotations</td>
<td>+++ Immediate</td>
</tr>
<tr>
<td>7</td>
<td>14</td>
<td>L</td>
<td>2</td>
<td>Lateral, 1 1/2 rotations</td>
<td>No – no further preoperative detorsion; 1 1/2 additional rotation needed in O. R.</td>
</tr>
<tr>
<td>8</td>
<td>15 1/2</td>
<td>L</td>
<td>72</td>
<td>Non-viable testis</td>
<td></td>
</tr>
</tbody>
</table>

Fig. 1a, b Case 1, torsion of the right testicle. a Initial US, 1 h post-torsion, reveals absence of flow within a homogeneous testis. b Following detorsion, restoration of blood flow is immediate.