CASE REPORT

Endoscopic treatment of intraluminal ureteral suture with holmium laser

Jorge Panach-Navarrete, María Negueroles-García, José María Martínez-Jabaloyas

Department of Urology, University Clinic Hospital of Valencia, Facultat de Medicina i Odontologia, Universitat de València, Valencia, Spain.

Summary
Although reconstructive surgery is the most accepted treatment for ureteral injury, there are reports of cases where endourologic treatment led to correct resolution of the problem. We present the case of a female patient aged 72-year-old who previously underwent sacral-colpopexy because of anterior vaginal compartment prolapse. The patient underwent surgery to remove the mesh, due to the pain she had had since it was placed. A mid-line laparotomy was performed removing completely the mesh. At 48 hours after intervention, the patient started feeling an intense pain in the left renal fossa that was not relieved with anti-inflammatories and morphic drugs. In the diagnostic ureteroscopy, it was found iatrogenic suture of the ureter. Due to the availability of holmium laser, an endoureterotomy was performed in the 12h central position on the tip, with laser parameters of 1J-10Hz. A 6F ureteral stent was maintained for one month. During follow-up, the patient remained asymptomatic and without dilation of the left system on imaging tests. Although we accept that open reconstruction is the gold standard treatment for ureteral trauma, we describe holmium laser endoureterotomy as a promising technique to consider in the event of ureteral intraluminal ligation.

KEY WORDS: Ureteral trauma; Endourology; Holmium laser.

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INTRODUCTION
Ureteral injury represents only 1-2.5% of urologic trauma. The main cause of ureteral injury is in 75% of the cases iatrogenic by urologic, gynaecologic, or colorectal surgery. Ureteral injury diagnosis must be suspected since there are no specific signs to identify it. Patient symptoms will depend on the degree of the wound, location, or the type of damage (perforation, ligation, transection). Computed tomography urography (CTU) and anterograde or retrograde pyelography presents high sensibility for ureteral trauma diagnosis (1).
Although reconstructive surgery is the most accepted treatment for ureteral injury, there are reports of cases where endourologic treatment led to correct resolution of the problem. Various procedures have been described from resolution of urinary leak by means of ureteral stent to ureteral realignment in case of complete transection (1). In this study, we present a case of an iatrogenic ureteral ligation with an intraluminal suture resolved by laser endoureterotomy. Here we describe the key points of the surgery as well as review similar cases reported in literature.

DISCUSSION
The use of holmium laser for the endoscopic treatment of intraluminal ureteral sutures has been previously described, with correct resolution in all cases. The summary of the published literature is summarized in Table 1 (2-5).

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Treatm ent of intralum inal ureteral suture

As can be seen in the review, endoscopic ureterotomy is a successful surgery which can prevent the patient from a more aggressive surgery.

As shown in Table 1, the use of the balloon dilatation catheter or the weeks of permanence of the stent are not clearly defined. In our experience, the clinical course of the patient was optimal without the use of a balloon and with maintenance of the stent for 4 weeks. From our point of view, it is a simple endourological procedure if you are used to ureteroscopy.

The main limiting factor could be the availability of laser in case of emergency surgery, so the possibility of its use must be foreseen. Although we accept that open reconstruction is the gold standard treatm ent for ureteral trauma, we describe a promising technique to consider in the context of ureteral intraluminal ligation.

Table 1.
Endoscopic treatm ent of intraluminal sutures, summary of published cases.

<table>
<thead>
<tr>
<th>Author</th>
<th>Number of cases</th>
<th>Balloon dilatation catheter</th>
<th>Weeks of stent</th>
<th>Success</th>
<th>Postoperative complication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hao, Z. (2)</td>
<td>12</td>
<td>Yes</td>
<td>12 weeks</td>
<td>100%</td>
<td>No</td>
</tr>
<tr>
<td>Bagley, D.H. (3)</td>
<td>1</td>
<td>No</td>
<td>6 weeks</td>
<td>100%</td>
<td>No</td>
</tr>
<tr>
<td>Lawrentschuk (4)</td>
<td>1</td>
<td>No</td>
<td>2 weeks</td>
<td>100%</td>
<td>No</td>
</tr>
<tr>
<td>Klett, D.E. (5)</td>
<td>1</td>
<td>No</td>
<td>8 weeks</td>
<td>100%</td>
<td>No</td>
</tr>
</tbody>
</table>

REFERENCES