SNAPSHOTS OF IV-DEGREE OASIs REPAIR FOLLOWING INSTRUMENTAL VAGINAL DELIVERY

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ABSTRACT

Perineal trauma following delivery is relatively common. It is reported that 85%-90% of women suffer from some degree of perineal tear.

The incidence of anal sphincter injuries, which are also known as Obstetric Anal Sphincter Injuries (OASIs), is fortunately much lower; it is estimated to be around 2.9% (0%-8%) and it is higher in primiparous (6.1%) than in multiparous (1.7%) women.

The low frequency of these injuries makes it difficult for junior obstetricians to acquire sufficient experience in their repair. A colorectal surgeon is not always available, especially during night shifts and weekends. For these reasons OASIs, if not gone undetected, can be mis-treated leading to anal incontinence.

We report a case of IV-degree OASIs after instrumental delivery with vacuum cup along with the snapshots taken during its repair with the aim of helping OBG residents and junior obstetricians to acquire experience in the treatment of these lesions.

INTRODUCTION

Perineal trauma following vaginal delivery is rather common. Fortunately, the lesion of the anal sphincter complex that is classified as III - IV-degree Obstetric Anal Sphincter Injuries (OASIs), is less frequent as its incidence is reported to be around 2.9%.

The drawback of this low incidence is that, when an OASIs occurs, it can be easily misdiagnosed and/or mistreated because of lack of awareness and proper surgical expertise. This can lead to a significant maternal morbidity early in the puerperium but also later in life especially as far as anal continence is concerned.

In the effort to improve these outcomes, a specific protocol for the surgical repair of OASIs was issued and implemented in the clinical practice of our hospital[10]. It involves the collaboration of a colorectal surgeon in the repair of III and IV-degree lacerations.

We report a case of IV-degree OASIs laceration that occurred after vacuum cup delivery, with the photographic documentation taken at that time. Our aim is to contribute to the development of surgical expertise in the treatment of these lesions.

CASE REPORT

A 33 years old primiparous woman suffered a IV degree OASIs after the instrumental delivery of a 3.300 gr baby with vacuum cup. This was mainly due to an expulsive effort by the woman that happened so suddenly and unexpectedly that the obstetrician had no time to apply any counterpressure to the perineum to avoid laceration. The injury was easily recognized as it involved the full thickness of the lower rectum and anal canal for a total length of 7 cm. The laceration was in the midline with ragged edges. The internal and external sphincters were not immediately visible because, as it always happens, their torn extremities were retracted laterally.

Moreover, as it is implied by the definition of a IV-degree OASIs, the laceration involved the recto-vaginal septum, the superficial perineal muscles (namely the transversus superficialis muscles and bulbocavernosus muscles) and the vaginal wall. A cloaca like defect was present (Fig 1).

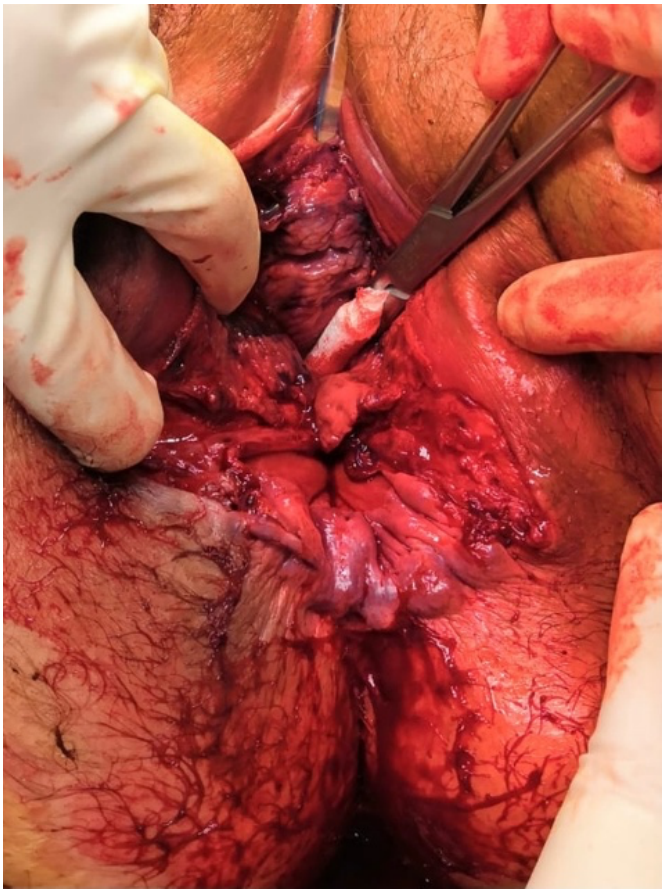

Fig 1. IV-degree OASIs: full thickness laceration of vaginal wall, perineal musculature, lower rectum and anal canal (for a total length of 7 cm) with creation of a cloaca like defect

The woman was transferred to the operating room and a general anesthesia was established. The first dose of an antibiotic prophylaxis with a second generation cefalosporin (cefalexine) was administered.

The lithotomy position was chosen with the buttocks 4-5 cm beyond the end of the operating table to improve exposure of the perineal area. The surgical field was prepped and draped and a Lone Star retractor was placed.

The laceration was repaired by layers starting from the rectal and anal mucosa which are the innermost ones. The proximal apex of the rectal mucosa was recognized and, starting from this point, this lining was reconstructed with a continuous Vicryl 2/0 suture extended to the anal margin. At the end of this step a finger was introduced into the anorectal lumen to ensure a tight and complete closure had been achieved (Fig 2).

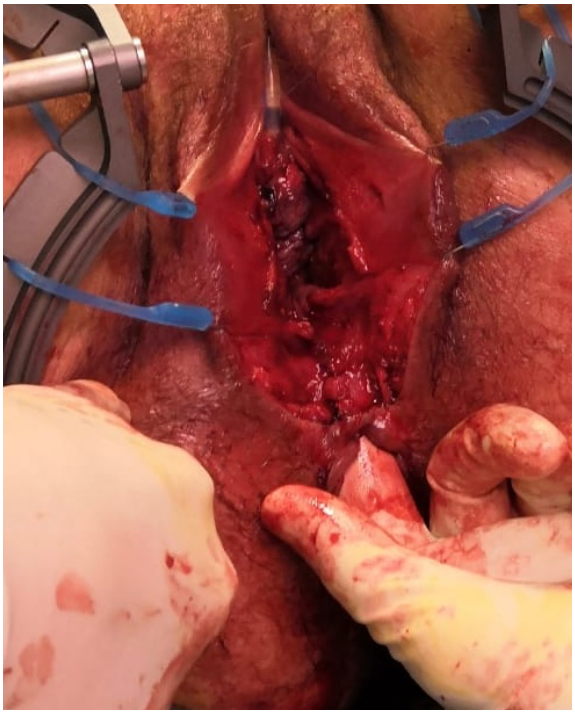

Fig 2. The innermost layer of the laceration, represented by the rectal and anal mucosa, was reconstructed first.

Then the muscular layer of the rectum was reconstructed using polydioxanone sutures (PDS) starting proximally. While moving distally the hooks of the Lone Star retractor were progressively released to facilitate approximation of the edges. The last 1.5 cm of the muscular layer, which are represented by the internal sphincter, were reconstructed with particular care. The two extremities of the internal sphincter were recognized by their pale color and sutured on the midline in an end-to-end fashion (Fig 3).

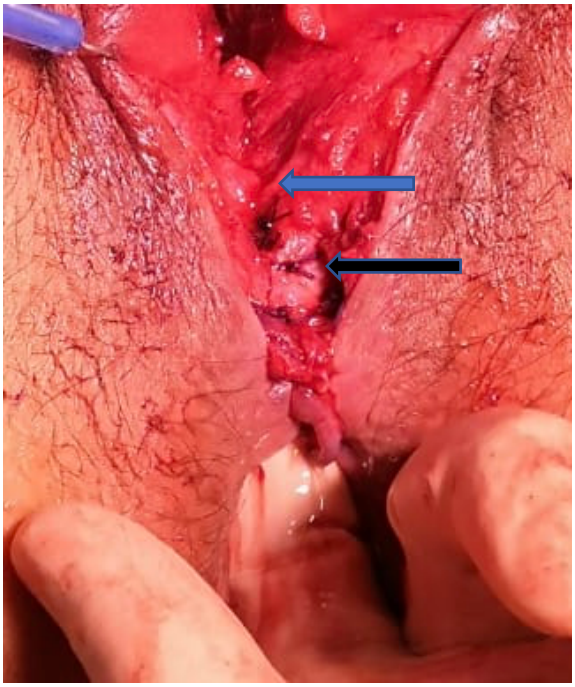

Fig 3. The muscular layer of the rectum (blue arrow) and the internal sphincter (black arrow) was repaired using a polydioxanone sutures (PDS)

The third step was the reconstruction of the external sphincter. The left extremity was recognized first and grabbed by an Allis forceps (Fig 4).

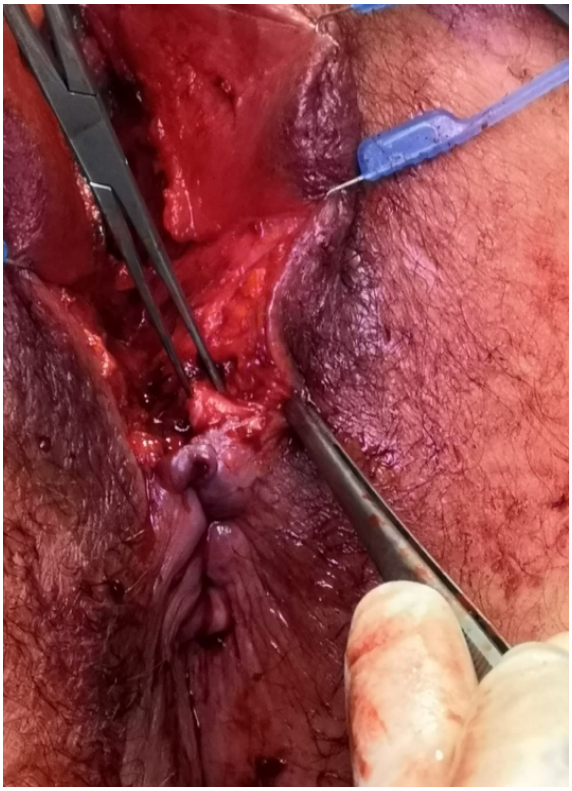

Fig 4. The left torn extremity of the external sphincter was recognized first and grabbed by an Allis forceps

The same maneuver was accomplished on the right extremity and the two ends were brought to the midline (Fig 5).

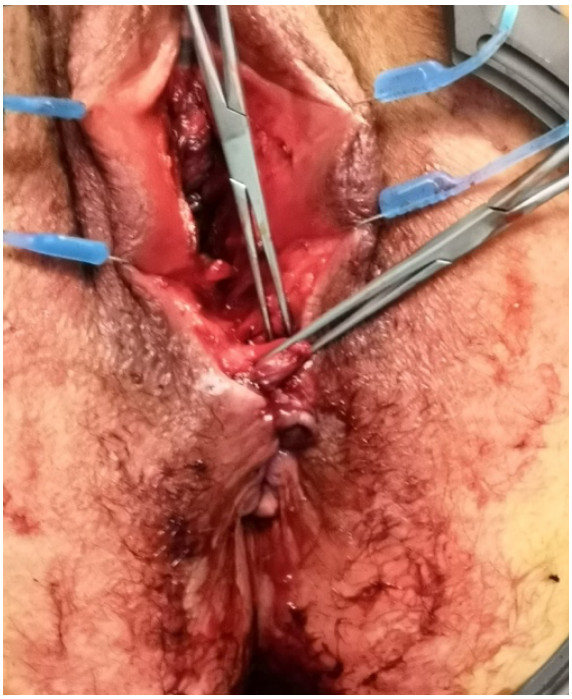

Fig 5. The right end of the external sphincter was grabbed by another Allis forceps and the two end were brought to the midline for an overlap suture using two Vicryl 0 mattress suture

At this point, the repair was made according the overlap technique using two Vicryl 0 mattress sutures. A gauze was placed on the reconstruction and some saline dyed with methylene blue was injected into the anorectal lumen to assess its tightness. The gauze was not stained by the blue (Fig 6).

Fig 6. A gauze was placed on the anorectal reconstruction and in order to assess its tightness some saline, dyed with methylene blue, was injected into the anorectal lumen.

The gynecologist carried on with the repair of the following layers. The transversus superficialis muscles were sutured on the midline. Then the vaginal wall was reconstructed with a continuous absorbable Vicryl 2/0 suture starting from the proximal apex of the laceration and moving distally. Once at the vaginal introitus, the torn ends of the bulbocavernosus muscles were incorporated in the suture recreating the tendinous body of the perineum. Figure 7 shows the final view at the end of the operation after stitching of the perineal skin.

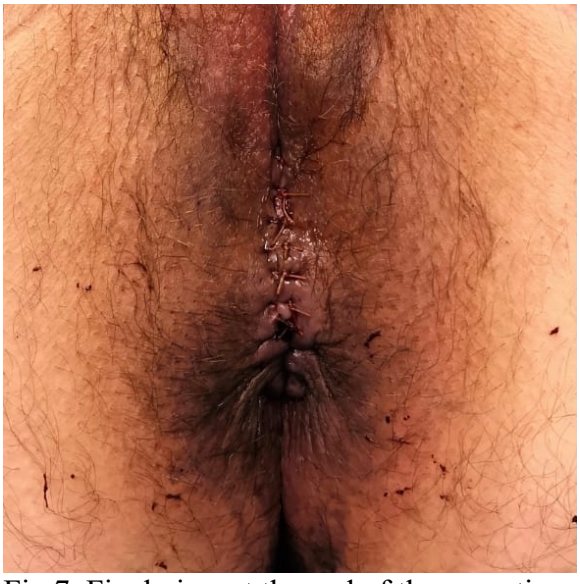

Fig 7. Final view at the end of the operation after stitching of the perineal skin.

Postoperatively the patient was put on liquid diet for two days and then on high fiber diet in order to avoid hard stools. With the same purpose, an osmotic laxative (lattulose) was administered for at least 7 days and the patient was strongly advised to avoid excessive straining during defecation. Antibiotic prophylaxis was carried on with cephalosporin 1 gr tid for ten days along with thrombotic prophylaxis with enoxaparin 4000 UI die.
The post-operative and post-delivery course were uneventful. The bowel opened to flatus on the 2nd post-operative day and the first bowel movement was registered on the 3rd post-operative day. In both cases the patient was able to actively control the passage of gas and stools without involuntary loss of them. On the 4th post-operative day, the woman was discharged.
A first follow-up visit has been scheduled after 1 month with digital rectal examination to asess the sphincter basal tone and its contractile strength during active squeeze. A further clinical evaluation has been scheduled after two months from the operation; in this occasion a trans-anal ultrasonography will be performed in order to evaluate the reconstruction from a morphological point of view. We are still waiting the results of both these visits.

DISCUSSION

Perineal trauma following vaginal delivery is very common. It is reported in 85% - 90% of women. Obstetric Anal Sphincter Injuries (OASIs) represent a much smaller percentage as they occur in 2.9% of vaginal deliveries.
According to Sultan[1] they can be classified into four degrees. The I-degree is the laceration of the vaginal epithelium only. The II-degree is defined by a laceration extended to the perineal muscles. A III-degree OASIs occurs when a tear of the anal sphincter is present. This degree can be subclassified into IIIa (when the laceration involves <50% of the external anal sphincter -EAS- thickness); IIIb (when the laceration involves >50% of the EAS thickness); IIIc (when the laceration involves the full thickness of the EAS and the internal anal sphincter -IAS-). Finally a IV-degree OASIs is defined by the extension of the laceration to the rectal mucosa.
Primiparous are more likely to sustain an OASIs (6.1%) than multiparous (1.7%). Other risks factors[2] are fetal weight > 4 kg, occiput posterior position, second stage labor length > two hours, shoulder dystocia, instrumental vaginal delivery (forceps > vacuum cup) and mother ethnicity (caucasian > black).
OASIs are associated to a significant burden of maternal complications. Early complications are mainly represented by abscess formation. This is due to the high bacterial load into the anorectal lumen that can lead to infection and subsequent dehiscence of the OASIs repair; a cloaca like defect or a recto-vaginal fistula would ensue in case of a total or a partial dehiscence respectively. Late complications are chronic perineal pain, sexual disfunctions, urinary incontinence and in particular anal incontinence. Anal incontinence can be of variable degree and can manifest later in life when age related laxity of the pelvic floor tissue impairs any compensatory mechanism of continence.
Prevention of OASIs is of paramount importance. Routine episiotomy is not recommended because it doesn't have any protective role[3] in perineal trauma; anyway, when indicated (as in case of operative delivery), it should be performed according the mediolateral technique with at least a 60° angle. The practice of antenatal perineal massage from the 35th gestational week to the delivery and during second stage of labor is considered a useful preventive measure[4]. Moreover, the incidence of OASIs can be reduced by application of warm gauzes on the perineum during the second stage of labor. The obstetrician should correct any fetal malposition and should favour the spontaneous expulsive effort by the mother. At this regard, the Kristeller maneuver should be avoided while the Finnish method which aid in redistributing tensive forces over a wider surface is recommended[5].

Despite all these measures, a certain amount of OASIs remains unpredictable and unavoidable. For this reason, it is important first to correctly diagnose and then to effectively repair such injuries. Diagnosis can be frequently missed or downstaged, especially in the case of button-hole tears[6-8]. It is reported that up to 28% of II-degree OASIs are III-degree. Several studies have demonstrated that, when awareness of perineal trauma is raised through in-hospital audits, more OASIs are reported. Groom[7] found that the incidence of III-degree tears trebled compared to the 6 months prior to the study (7.5% versus 2.5%). This explains why the Royal College of Obstetricians and Gynecologists and other professional bodies that a competent and complete examination should be expected following all vaginal deliveries[8].

Similarly to diagnosis, also surgical treatment of OASIs seems to be suboptimal according to scientific literature. Sultan et al[9] in their audit of midwives and trainee doctors found a deficiency and dissatisfaction in training in perineal anatomy and repair.

For all the above-mentioned reasons, in order to improve diagnosis e treatment of OASIs, a specific protocol[10] was implemented in our hospital which is a second-care facility in the densely populated area of Treviso, Italy. This protocol describes in detail how to avoid an OASIs and how to diagnose and repair one whenever it occurs. It also involves the collaboration of a colorectal surgeon in the repair of III and IV-degree lacerations.

Some time later, after the introduction of this protocol, a IV degree OASIs occurred. During the surgical repair some photos of each step of the repair were taken. We decided to make this iconographic documentation available to scientific community, through the present paper, in order to improve the care of this bothersome traumas.

CONCLUSIONS

Treatment of Obstetric Anal Sphincter Injuries (OASIs) is particular challenging. The development of specific surgical skills and a strict collaboration of obstetricians with colorectal surgeons can improve the outcomes of their repair. With this paper we tried to give our contribution to the professional growth in this field of junior obstetricians and colorectal surgeons.

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