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Fourth degree perineal tears: surgical repair technique in 10 steps

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Abstract

Obstetrical anal sphincter injury (OASIS) may lead to significant comorbidities, including anal incontinence, rectovaginal fistula, and pain. A correct repair is required to avoid improper healing, as a persistent defect in the external anal sphincter after delivery can increase the risk of complications and worsening of symptoms following subsequent vaginal deliveries. Herein is described the surgical repair technique for a fourth degree perineal tear. Regarding resident education, there are challenges associated with the proper training in OASIS repair. The procedure is illustrated by an instructive video article that standardizes the essential steps to make the technique ergonomic and easy to perform with step-by-step explanations.

Keywords: fourth degree perineal tears; obstetrical anal sphincter injury (OASIS); vaginal birth, anal sphincter, postpartum urinary retention

1. Introduction

Obstetrical anal sphincter injury (OASIS) may lead to significant comorbidities, including anal incontinence, rectovaginal fistula, and pain. Proper repair is required to avoid the risk of complications and worsening of symptoms following subsequent vaginal deliveries. OASIS should be repaired by practitioners appropriately trained and comfortable with performing such repairs.

2. Case presentation

The case of a 25-year-old primiparous patient, at 39 weeks of amenorrhea, delivered vaginally spontaneously without episiotomy is presented. A fourth degree OASIS was diagnosed and the patient was transferred to the operating room.

3. Surgical technique

35

36 We present the surgical technique of a Fourth degree perineal tears repair in ten
37 steps.

38 The surgical team should be familiar with the anal sphincter complex anatomy.

39 The internal anal sphincter is a 3 to 5 mm thick continuation of the rectal smooth
40 muscle and is responsible for ensuring continence at rest. The Obstetrical Anal
41 Sphincter Injuries international classification was used: the fourth degree represents
42 an injury to the perineum involving the anal sphincter complex and anal epithelium.

43

44 **The Step 1 consists in the proper installation of the patient and preparation of**
45 **the surgical area**

46 The surgical repair should be performed in an operating room, to ensure appropriate
47 and optimal lighting, under neuraxial anesthesia, and should absolutely be performed
48 by an experimented obstetrician. A Prophylactic antibiotics by cephalosporin second
49 generation at the start of the repair should be administered.

50

51 **The Step 2 consists in a proper physical examination, including vaginal and**
52 **rectal examination**

53 Before starting the repair, a proper physical examination of the vagina and rectum is
54 required. The vaginal examination consists in an inspection of the perineum and
55 distal posterior vagina, thorough tracking of the full extent of vaginal tears in order to
56 allow the correct repair, plan by plan, of the anorectal mucosa, the internal anal
57 sphincter, and the external anal sphincter. The ends of the external sphincter are first
58 identified and grasped with 2 temporary sutures because they often retract.

59

60 **The Step 3 consists in anal mucosa suture**

61 The mucosal repair is carried out with a 3.0 absorbable synthetic monofilament
62 suture.

63 Knots must absolutely be tied externally to the anal canal. The anal mucosa is very
64 thin. The mucosal repair is gradually and slowly performed with a submucosal
65 continuous suture, and stopped just at the anal margin limit, then knots are tied.

66

67 **The Step 4 consists in a very careful rectal examination**

68 This step ensures that the repair is adequate and allows the identification of any
69 sutures connecting the vagina to the rectum.

70 **The step 5 consists in the Internal Sphincter suture**

71 This is a critical step. Indeed, the internal sphincter defect absolutely needs to be
72 repaired to allow an improvement of anal continence. This step is performed with a
73 2.0 braided absorbable interrupted horizontal suture, as seen in the cartridge in the
74 lower part, with "U"-shaped knots. The mattress suture must be regularly swabbed
75 with polyvidione iode. Three knots are necessary in this case to suture the internal
76 sphincter.

77

78 **The Step 6 consists in the vaginal wall suture**

79 The vaginal wall suture is initiated in order to get a better exposition and to decrease
80 vaginal bleeding. A 2.0-braided absorbable continuous suture is used in the
81 beginning with the vaginal superior angle. The running process is stopped just before
82 the external sphincter suture step.

83

84

85 **The Step 7 consists in the external anal sphincter suture**

86 At first, the muscle ends previously grasped with the 2 temporary sutures must be
87 tracked. Three knots are used to tighten properly the external sphincter and then
88 knots are tied.

89

90 **The Step 8** consists in continuing the suturing of the lower part of the vaginal wall.

91 The process is stopped just before the hymeneal remnants, as for a usual second
92 degree perineal tear.

93

94 **The Step 9 consists in suturing the hymeneal remnants and posterior
95 perineum.**

96

97 **The step 10 consists in suturing vaginal muscles and perineal skin.**

98 The perineal body and perineal muscles (bulbo cavernous and transverse perineal
99 muscles) are reconstructed to release the tension on the anal sphincter.

100 Finally, the perineal skin is sutured with a 2.0 braided absorbable suture.

101 A final rectal examination is performed to ensure that the repair is adequate and to
102 identify any sutures connecting the vagina to the rectum potentially made during the
103 repair. After the surgical repair is done, the bladder is emptied by catheterization.

104 Postoperative care consists in:

105 Analgesia with nonsteroidal anti-inflammatory drugs (NSAIDS) and acetaminophen
106 as first line analgesics, antibiotics for 2 days, and the use of postoperative laxatives.

107 Early pelvic floor physiotherapy and a follow-up with an obstetrician are planned 10
108 days after the repair.

109

110 **4. Discussion**

111

112 Obstetrical anal sphincter injuries (OASIS) are obstetrical lesions of the anal
113 sphincter corresponding to third and fourth degree tears according to the WHO-
114 RCOG Classification [1].

115 OASIS may cause many functional consequences, such as perineal pain, acute
116 retention of urine, dyschesia, and abscess in the short term, and fistulas,
117 dyspareunia, neuropathy, and anal incontinence in the long term [2]. Active or
118 passive gas and/or stool incontinence affects on average 39% of patients after
119 OASIS [2,3]. These injuries can have a significant impact on women as they impair
120 their quality of life and are responsible for a significant financial and psychological
121 burden on patients [4]. Furthermore, in terms of resident education, there are
122 challenges associated with proper training in OASIS repair. This article is part of this
123 perspective of facilitating teaching of the proper repair technique of obstetric perineal
124 lesion [5].

125 It is necessary to make a very acute assessment of perineal and rectal lesion post-
126 delivery. The study by Fernando *et al.* conducted by the RCOG has found that 33%
127 of obstetricians consider a third degree injury as a second degree injury, and 22% of
128 residents consider a third degree injury as a second degree injury [6,7]. Careful
129 examination by a vaginal touch and a rectal touch is essential after childbirth [3,4].

130 The means of prevention are mainly represented by the control of the descent of the
131 fetal head allowing a reduction of 50% to 70% of OASIS [8]. Perineal support by host
132 sponge or perineal massage seem to be interesting to limit the expulsion efforts
133 during the expulsion phase [9]. Mediolateral or lateral episiotomy (60° angle)

134 decreases the risk of OASIS during an instrumental delivery compared to a midline
135 episiotomy or no episiotomy [10].

136 Vacuum-assisted vaginal extraction presents less risk of OASIS lesion than forceps;
137 it is advisable to remove forceps before the expulsion phase [10].

138 A few studies have compared different suture types used for external and internal
139 sphincter repair. Suture should be absorbable or quickly absorbable. Studies
140 comparing polyglactin 2-0 (Vicryl) to polydioxanone 3-0 (PDS) have found no
141 difference in terms of morbidity at 6 weeks post-delivery [11].

142 There is currently no comparative study that could help define the best repair
143 technique to use for anal mucosa repair. The repair of the anal mucosa can be
144 performed either using interrupted sutures of polyglactin 3-0 or using monofilament
145 running suture with polydioxanone 3-0. It is advisable to avoid “X”-shaped knots, as
146 they are most ischemic and ineffective regarding healing [5,12,13]. The recent good
147 clinical practices of the CNGOF (*Collègue national des gynécologues et obstétriciens*
148 *français*, French college of gynecologists and obstetricians) is in accordance with
149 these recommendations [8].

150 Internal sphincter repair has been shown to be essential to improve anal continence
151 [3,13]. The external sphincter can be sutured using the end-to-end technique or the
152 overlap technique, neither of these techniques is preferred over the other. The
153 studies assessing either of both techniques are heterogeneous, include a small
154 number of patients, and poorly assess the quality of life regarding incontinence and
155 patient satisfaction; it is therefore unclear whether one of these techniques is
156 preferable compared to the other regarding the long-term outcome [5,6]. The end-to-
157 end technique allows the use of Metzenbaum scissors to dissect the ends of the
158 external sphincter. The overlap technique requires more dissection and mobilization
159 of the sphincter ends, along the ischioanal fossa.

160 It is possible to delay the repair for 8 to 12 hours in order to wait for an experimented
161 obstetrician to be available with no difference in the incontinence scores at 6 and 12
162 months [14]. A detailed account of the extent of the lesions, method of repair, and
163 equipment used is recommended.

164 As latest studies have demonstrated, the administration of a prophylactic single dose
165 intravenous antibiotics at the beginning of the repair (2nd generation cephalosporin)
166 allows to prevent perineal wound complications and morbidity [15,16]. In addition,
167 early administration of NSAIDS decreases perianal pain [9,17].

168 Patients with OASIS and epidural anesthesia are at elevated risk for postpartum
169 urinary retention [18,19]. Epidural analgesia is also considered a risk factor for
170 postpartum urinary retention as it directly affects the sensitivity and contractility of the
171 bladder.

172 Several authors have proposed a systematic indwelling catheterization for a minimum
173 of 12 hours post-partum [9,18]. Taking into consideration the augmented risk of
174 urinary infections, some author have proposed to empty the bladder by
175 catheterization at the end of the repair and implement a systematic bladder scanning
176 protocol to ensure proper bladder emptying [19]. The use of laxatives allows for
177 quicker and less painful bowel motions and an earlier discharge from hospital, but
178 has not been associated with a significant difference in the scores of continence or
179 anal manometry and endoanal ultrasound at 3 months post-partum [9,20].

180

181

182 **5. Conclusion**

183

184 Obstetrical anal sphincter injuries (OASIS) diagnosed properly and repaired in good
185 conditions can lead to a good functional outcome. All women after delivery should be
186 carefully examined for perineal or vaginal tears with systematic rectal examination to
187 avoid missing OASIS.

188 In order to reduce the rate of unknown sphincter lesions, it is essential to improve the
189 skills of the teams in charge of delivery, as well as midwife, residents, and
190 experimented obstetricians.

191

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