The need for diverting colostomy in obstetric and non-obstetric anorectal injury repair

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Abstract
Between 0,2% and 6% of women experience severe anorectal injuries in the form of third- and fourth-degree tears during vaginal birth. Early diagnosis and correct repair by experienced surgeons reduce morbidity and devastating complications such as faecal incontinence and fistulae formation. While there is sufficient evidence for the correct surgical suturing techniques, the use of diverting colostomies remains controversial and poorly researched. In this review we performed a MEDLINE search of all published studies on the role of diverting colostomies in obstetric and non-obstetric anorectal injury repair. Most authors avoid commenting on the utility of colostomies as part of their surgical approach making it difficult to make recommendations for clinical practice. We conclude that, based on published opinions, case series and clinical outcomes, the use of colostomy is seldom warranted. Comparative data is absent and further research is needed.

INTRODUCTION

Labour and delivery associated perineal tears are graded first to fourth degree depending on the severity of anatomical damage[1]. A detailed classification of perineal tears, as shown in table 1, has enabled health practitioners to detect, describe and manage perineal tears more accurately. Of these tears, around 4% are third and fourth degree[2] and termed obstetric anal sphincter (OASI), which can be associated with longstanding complications. Complications include wound infection, wound dehiscence, hospital readmission and re-operation[3] as well as chronic pain, faecal and flatal incontinence[4]. According to Stock et al, early secondary repair(within 14 days of delivery) due to dehiscence of a primary repair is required in 2.6% of women[3].

To ensure sufficient blood supply and complete resolution of inflammation, repeat repairs of a dehisced primary repair is traditionally delayed for 3-6 months[5], which leads to increased morbidity, sexual dysfunction, pain, anal incontinence and overall decreased quality of life[6]. A further rationale for delayed repair is prevention of infection, abscesses and fistulae[7]. Faecal diversion, in the form of colostomies for anal sphincter and fistulae repair in these cases remains controversial.[8] Colostomies have unpleasant consequences for patients[9]. This study aims to describe the role of diverting colostomy in the primary and secondary surgical repair of severe ano-rectal tears, based on a review of the literature.

Table 1: Classification of Obstetric Perineal Injury

Injury	Definition
Second Degree	Injury to the perineum involving perineal muscles but not involving the anal sphincter
Third Degree	Injury to the perineum involving the anal sphincter complex • 3a: Less than 50% of external anal sphincter thickness torn • 3b: More than 50% of external anal sphincter thickness torn • 3c: Internal anal sphincter torn
Fourth Degree	Injury to the perineum involving the anal sphincter complex and rectal mucosa
Taken from: Fernando RJ, Sultan AH, Radley S, Jones PW, Johanson RB. Management of obstetric anal sphincter injury: a systematic review & national practice survey. BMC Health Serv Res. 2002; 2:9 ([3])	

METHODS

We performed a review of all published articles reporting outcomes of repair of anal sphincter injury and it's complications. A MEDLINE literature search was conducted, using the terms

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obstetric anal sphincter injury, rectovaginal fistula, perineal trauma, colostomy and fecal diversion. Search results yielded 34 titles of which all abstracts were screened and relevant articles reviewed.

RESULTS

Although numerous authorities have discussed the surgical management of obstetric ano-rectal injuries in literature, many of them do not comment on use of a diverting colostomy as part of management nor on its effect on surgical outcomes. The evidence for the need of faecal diversion to aid healing after a primary repair is particularly lacking[10], resulting in deficient evidence to guide clinical practice. In the section below, we summarise the findings of single cases, case series and classification systems for obstetric anal sphincter injury, recto-vaginal fistulae, and other ano-rectal injuries separately.

Obstetric anal sphincter injuries

Hasegawa et al conducted a randomized trial to determine whether patients who required anal sphincter repair would have improved surgical and functional outcomes with faecal diversion. From the 27 patients randomized (n=13 no stoma and n=14 stoma), there was no conclusive evidence that a defunctioning stoma conferred any benefit in wound healing or functional outcome between 16-47 months after repair [8]. Stoma related complications such as stomal prolapse, infection and hernias occurred in almost half of the patients.

Cook et al achieved satisfactory short term (1 year) results in the repair of severe fourth degree lacerations in a small study involving 4 women[11]. In their colorectal unit they employed overlapping technique as well as a colostomies for all patients and the women were re-evaluated at 3 months using manometry, pudental latencies and ultrasound. These outcomes suggest an integrated approach with a colorectal team.

In another case series of 55 patients with faecal incontinence related to obstetric trauma, surgical outcomes were assesses using anal endosonography and physiological testing[12]. Some of these patients had incontinence after delivery (n=32) and others late onset incontinence (n=23). Marked improvement was demonstrated in 42 patients at 15 months review with only 2 of the patients having had a colostomy.

The term "cloacal trauma" was first described by Abcarian[13] and includes the now standardised terms deficient perineum (DP) and total perineal defects (TPD). It is an uncommon defect that occurs in about 0,03% of all vaginal deliveries particularly in primiparous women in developing countries[14].

A single surgeon series of the repair of a traumatic deficient perineum in a small cohort of patients (n=20) resulted in a good long-term outcome with 90% functional satisfaction according to the Cleveland Clinic Incontinence Score[15]. In this study no faecal diversion was used for this cohort of patients. Spelzini et al reported on a case of a 27 year old women with traumatic cloacal defect after obstetric anal sphincter injury and unsuccessful primary repair. Faecal diversion was not performed but with complete anatomical and functional restoration at 24 months follow up[16].

Okeahialam et al describes a large case series of early secondary repair or primary repair of OASI (n=510) in Croydon University hospital between 2010 to 2019. They also performed a narrative review of all published cases of early secondary repair of OASI(n=96). In the literature review as well as their case series, wound irrigation, a three layer repair technique and post repair broad spectrum antibiotics were used. Patients were followed up subjectively and objectively with manometry and endoanal ultrasound. Normal manometric incremental squeeze pressure was found in 83% of patients, with no full-thickness external anal sphincter defects. They concluded that early secondary repair without colostomy is a feasible surgical procedure for the reconstruction of dehisced OASIs[17].

Rectovaginal fistulae

De-functioning colostomies are more readily described for secondary, late repairs and recto-vaginal fistulae [18, 19] but the indications remain elusive and its effectiveness is not known[11]. In a study of 30 patients with rectovaginal fistula with faecal incontinence secondary to obstetric perineal injury, satisfactory continence was achieved in all patients using a gracilis flap. None of the patients had a covering colostomy and only two patients developed superficial wound infection at the incision site[20]. Mukwege et al conducted a study on 10 patients with high recto-vaginal fistulae secondary to trauma such as rape[21]. Fistulas with diameters larger than 2,5cm were classified as large and vaginal fibrosis assessed using the Goh classification[22]. Therapeutic options for the management of deep penetrating rectovaginal fistulas include suturing with or without colostomy. While none of the patients received protective ileostomy or colostomy they reported 90% clinical success (cure) in the repair of the fistulas at 3 months follow-up.

Marchant et al reported on a deep large ano-rectal injury in a women secondary to non- consensual anal intercourse[23]. Suture-only repair was undertaken within hours of the injury although some authors generally recommend that a stoma should be considered for a better chance of recovery and fewer infectious complications. At one month follow-up, the patient showed no complications nor incontinence.

Other ano-rectal injuries and anomalies

Berger et al reported on a case of recurrent rectovaginal fistulae in a 37 year old nulliparous women following creation of a neovagina for congenital absence of the lower vagina[24]. Despite multiple surgeons recommending colostomy in association with repair using a submucous matrix graft, she declined a colostomy. Repair was undertaken without a diverting colostomy with no recurrence of the fistulae at 18 months follow-up. Similarly, in a case series involving 8 women with recto-neovaginal fistulae after creation of neovaginas in Mayer-Rokitansky-Kuester-Hauser syndrome, good functional status with no complications was achieved despite only one of the cases having had a temporary colostomy[25].

Tsugawa et al suggests that secondary surgery to restore faecal continence in adolescents and adults with ano-rectal malformations can be safely performed without a diverting colostomy[26]. Richard et al concluded from a comparative study of surgical anal repair (obstetric and non-obstetric) that colostomy is not a determining factor in the outcome and is therefore not required, avoiding all colostomy related morbidity and disability[27]. Di Bella et al reported on seven patients with traumatic lesions of anal sphincter apparatus that were surgically treated without a protective colostomy. Five of these patients had excellent clinical and manometric results with no infections[28].

Fig. 1 Poorly repaired third degree perineal tear

Table 2: Rectum Injury Severity Scale

Grade*	Type of injury	Description of injury
I	Hematoma	Contusion or haematoma without devascularization
	Laceration	Partial-thickness laceration
II	Laceration	Laceration < 50% of circumference
III	Laceration	Laceration > 50% of circumference
IV	Laceration	Full-thickness laceration with extension into the perineum
V	Vascular	Devascularized segment
*Advance one grade for multiple injuries up to grade III		
Taken from: Moore EE, Cogbill TH, Malangoni MA, Jurkovich GJ, Champion HR, Gennarelli TA, et al: Organ injury scaling II: pancreas, duodenum, small bowel, colon and rectum J Trauma 1990,30(11)1427-1429. (34)		

Discussion

We found a paucity of evidence on which to base practice recommendations, and significant difference in expert opinion regarding diversion of the faecal stream when undertaking surgical repair of severe perineal lacerations and fistulae. A survey in the United Kingdom, among practicing obstetricians and colorectal surgeons responded to a questionnaire showed that 30% of colorectal surgeons recommended a defunctioning colostomy for third and fourth degree tears, while no obstetricians believed a colostomy was necessary[18]. Morken et al proposed the use of a scoring system (Rectal Injury Severity Score of the American Association for Surgery in Trauma) to aid in the decision to utilise faecal diversion[29]. They demonstrated that there was greater morbidity with diversion for low-grade injuries and recommended limiting faecal diversion to patients with Rectal Injury Severity Scores >II (Table 2).

Colostomies can have unpleasant consequences for the patient, incluing impaired wound healing due to reduced collagen metabolism and altered mucosal defense in the de-functionalized rectum, thereby impairing healing[30]. Attenuation of mucosal integrity with microbial translocation increases infectious morbidity[31] and morbidity associated with stoma creation and closure[32].

Conclusion

Obstetric and some non-obstetric anorectal injuries are amenable to repair without diversion. Due to a lack of good evidence that a colostomy adds much benefit to the outcome of especially obstetric anal injuries repairs, it appears that a colostomy is seldom justified. More research needs to be done to provide better data for evidence based clinical decisions.

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