

## Anal Sphincter Repair for Fecal Incontinence. Experience from a Secondary Care Center

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**Background:** Fecal incontinence (FI) is a chronic and debilitating condition that carries a significant health, economic, and social burden. This disease is characterized by the frequency of episodes and the consistency of the feces. The aim of this study was to review our experience with overlapping sphincteroplasty to assess its efficacy on the surgical treatment of fecal incontinence.

**Methods:** Retrospective study was conducted for all patients who underwent overlapping sphincteroplasty in our institution from April 2007 to May 2017, for Fecal Incontinence with defects sphincter, at the Hospital Sor Juana Ines de la Cruz. All patients had evidence of a sphincter defect during physical examination, which was confirmed by Endoanal Ultrasound. Follow-up data were gathered from outpatient clinic visits and were obtained last office visit. The patients with fecal incontinence were asked Cleveland Clinic Florida Fecal Incontinence score (CCFFISW) Wexner score was registered preoperatively and 6 weeks postoperatively were collected.

**Results:** We performed twenty one overlapping sphincteroplasty for patients with fecal incontinence during a study period of ten years. Patients mean age was 56.95 years  $\pm$  14.95, range (25 - 78). The etiologies were 11 patient's Obstetric injury (52.38%), Diabetes Mellitus six patients (28.57%), anorectal surgery 3 patients (14.28%) and one patient who had traumatic rectal impalement (4.76%). The mean of CCFFIS Score Wexner decreased from 19.19 (range 17 - 20) to 9 (range 5 -18) after sphincteroplasty, with improved quality of lifestyle 12 months after procedure, even young patients affirmed to have sexual function improved. The median follow-up time was 12 (range 6 - 24,  $\pm$  14.38) months. Postoperative wound dehiscence partial was the most common complications after sphincteroplasty in 15 patients (71.42%). Only one patient went another hospital and undergone to terminal colostomy. One patient failed sphincteroplasty, and after one year had undergone a repeat.

**Conclusion:** The overlapping sphincteroplasty is an effective treatment of choice for fecal incontinent patients with defects sphincter. This procedure still has a positive role to play in the management of fecal incontinence and has low costs when are compare with another surgical procedure for fecal incontinence.

**Keywords:** Fecal Incontinence; Sphincteroplasty; Sphincter Defect; Sphincter Repair

**Introduction**

Fecal incontinence (FI) is a chronic and debilitating condition that carries a significant health, economic, and social burden [1].

The negative psychological effects, social stigma, and reduced quality of life surrounding fecal incontinence can be devastating for affected adults. This disease is characterized by the frequency of

episodes and the consistency of the feces [2], with symptoms of involuntary loss of feces which includes solid feces [3], liquid feces [4] and fecal seepage (leakage of stool with grossly normal continence and evacuation) [5]. Recent studies indicate in USA about the prevalence of fecal incontinence adults was 8.39%. Prevalence increased with age from 2.91% among 20 - 29 year old participants to 16.16% among participants > 70 years [6]. Fecal incontinence severely reduces the quality of life and also has psychosocial implications. It is relatively more common in women and elderly. Although the symptom is often attributed to obstetric anal sphincter injury among women with fecal incontinence [7], this disease is multifactorial which associated with factors such as dysfunction in the internal anal sphincter (IAS), external anal sphincter (EAS) and recto-anal sensory dysfunction [8]. Many studies have been lacking in the use of standardized assessment tools such as the Wexner-CCF incontinence score, Fecal Incontinence, Severity Index (FISI) and the Fecal Incontinence Quality of Life Scale (FIQLS) [9-11]. Current treatments for fecal incontinence are biofeedback, injectable agents, sphincteroplasty, artificial bowel sphincter or sacral nerve stimulation. The overlapping sphincteroplasty is the most common indication surgical for fecal incontinence caused by obstetric anal sphincter injury. It is uncertain whether the etiology of the sphincter lesion can affect the outcome (Altomare., *et al.* 2010), which aims to reestablish the normal anatomical structure and function of the anal sphincter complex in conservative management has failed. Sphincteroplasty was first described by Lockhart-Mummery [12] who reported only on the end-to-end apposition of the margins of the damaged anal sphincter, however, the operation become popular following a publication by Parks., *et al.* [13] who first described the overlapping sphincteroplasty. Since then, this operation is generally believed to be the treatment of choice for incontinent patients with defects sphincter usually located anteriorly.

### Aim of the Study

The aim of this study was to review our experience with overlapping sphincteroplasty to assess its efficacy on the surgical treatment of fecal incontinence in patients with fecal incontinence secondary to defect sphincter.

### Materials and Methods

We performed a retrospective study of all patients who underwent overlapping sphincteroplasty in our institution from April 2007 to May 2017, for Fecal Incontinence. All patients had evidence of a sphincter defect during physical examination, which was confirmed by Endoanal Ultrasound. All patients were performed

preoperative physical examination. The pelvic floor was examined by inspection, palpation, and digital rectal, during voluntary contraction of the pelvic floor and during relaxations. The anal sphincter were acquired with a 10-MHz, 360°, rotating endoprobe (Type 2050, BK Medical, Herlev, Denmark). The patients data obtained included demographic, clinical, and operative data collected from the patients' medical charts, such as age, gender, comorbid conditions (diabetes or colitis), length of incontinence symptoms, number of deliveries, cause of fecal incontinence, length stay hospital, surgical time of surgery. The patients with fecal incontinence were asked Cleveland Clinic Florida Fecal Incontinence score (Wexner score best = 0 and worst = 20), as was described by Jorge and Wexner [9]. This score was registered preoperatively and 6 weeks postoperatively were collected. Follow-up data were gathered from outpatient clinic visits and were obtained last office visit. All procedures were performed for a Colorectal Surgeon with wide experience surgical and participated in all sphincteroplasty during the study period. This study aims to assess the functional outcome of a single surgeon series of overlapping anal sphincter repairs. Statistical analysis was performed using the computer statistical package Instat (1993).

### Surgical technique

The patients were operated under spinal anesthesia and placed in jack knife position. Routine use of a Foley catheter will prevent problems with urinary retention postoperatively. A curvilinear incision is made transversely between the anus and the vaginal introitus parallel to the outer edge of the external sphincter. Scar tissue was dissected from the posterior vaginal wall and from the anterior anal canal. Lateral mobilization extended into the perianal fat pads. The entire sphincter mechanism is then dissected widely from its bed with the cephalad extent to the anorectal ring of muscles. Palpation both vaginally and rectally is essential during this dissection to prevent buttonholing either structure. Adequate mobilization is necessary to ensure a tension-free wrap. The scar tissue in the midline was then divided. Dissection of two-thirds of the circumference should be adequate, but care must be taken to not injure the pudendal nerves posterolaterally. The muscle is then divided through the scar tissue in the midline, and then two ends are them overlapped to form a new sphincter complex to narrow the anal aperture until the size of an average size index finger (Figure 1-4). The perineal body is then reconstructed by bringing together the tissue on either side of the perineum (i.e. transverse perineal muscle) which allows separation of the vaginal introitus and the anus. The internal anal sphincter was sutured end-to-end with in-

interrupted polypropylene (Prolene 2-0 sutures. Ethicon, Inc. Somerville, New Jersey USA). The external anal sphincter was sutured with overlapping interrupted (Prolene 2-0 sutures). Two mattress sutures on either side of the anus are adequate. It is easiest to place all sutures prior to tying them down. The skin was closed with a T-suture interrupted using (Ethilon Nylon 2-0). A small part of the skin was left open for Penrose drainage to prevent abscess formation (Figure 4). The drain was removed prior to discharge. A Foley catheter was used until the 1<sup>st</sup> postoperative day. Preoperative and postoperative prophylactic antibiotics with Ciprofloxacin 200 mg and Metronidazole 500 mg intravenously were administered.

**Figure 1 and 2:** A curvilinear incision is made transversely between the anus and the vaginal. Sphincter internal mechanism is then dissected widely from its bed (photos of first author).

**Figure 3 and 4:** The external anal sphincter was sutured with overlapping interrupted. A small part of the skin was left open for Penrose drainage.

## Results

We performed twenty one overlapping sphincteroplasty for patients with fecal incontinence during a study period of ten years. Patients mean age was 56.95 years  $\pm$  14.95, range (25 - 78). The eti-

ologies were 11 patient's Obstetric injury (52.38%), Diabetes Mellitus six patients (28.57%), anorectal surgery 3 patients (14.28%) and one patient who had traumatic rectal impalement (4.76%). Operation time was from 60 - 150 (100  $\pm$  27.24) min. The mean days stay at hospital was 2 (range 2 - 7 days). The median follow-up time was 12 (range 6 - 24,  $\pm$  14.38) months. Only one patient went another hospital and undergone to terminal colostomy. One patient failed sphincteroplasty, and after one year had undergone a repeat overlapping sphincteroplasty for persistent symptoms and defect on anal ultrasound with subsequent improvement of symptoms. Incontinence duration time was 16 months (range 5 - 36  $\pm$  8.94) until make the diagnosis. All patients went to spinal anesthesia (100%). The mean of CCFIS Score Wexner decreased from 19.19 (range 17 - 20) to 9 (range 5 - 18) after sphincteroplasty, with improved quality of lifestyle 12 months after procedure, even young patients affirmed to have sexual function improved. Postoperative wound dehiscence partial was the most common complications after sphincteroplasty in 15 patients (71.42%), ten patients (47.61%) presented pain in perineal region. Postoperative wound dehiscence was associated with abscess wound in 4 patients (19.04%). During the procedure sphincteroplasty were combined another procedure 2 patients (rectocele 9.52%), partial rectal mucoso prolapsed (3 patients 14.28%) and 4 patients (19.04%) vaginal tear. The median vaginal delivery was 4 (range 0 - 14).

## Discussion

The overlapping sphincteroplasty is widely accepted as the surgical treatment of choice for fecal incontinence secondary a sphincter defects [14,15]. The findings of this study (85.71%) indicate that overlapping sphincteroplasty improves anal continence in most patients with defects and injuries anal sphincter when they are evaluated postoperatively. Of course, the extent of sphincter damage plays an important role in the outcome. Similarly, results reported [16], with 90% in follow up 35 months. Sangalli and Marti [17] reported a 78% success rate for repair after obstetric injury. Malouf, *et al.* [18] affirmed, anterior sphincter defect documented good results with short-term of 70 to 80% in anal sphincter repair in patients with fecal incontinence and considered is still the best surgical option. Same results [19] with 74% improved continence. However, not all women with sphincter defects report symptoms of incontinence [14] only one third of those women will develop symptoms of fecal incontinence, there are also other factors may be contributing such us, nerve damage during labor neuropraxia to pudendal nerve [20], aging of the muscles with progressive fibrosis and increasing collagen deposition have been shown to decrease

anal sphincter pressures [21]. Lastly, the presence of diabetes is associated with increased risk of recent as well fecal incontinence, the diabetes is an established risk factor thought to be secondary to irreversible autonomic neuropathy [22]. Our study shows diabetes second cause fecal incontinence with (28.57%) patients. In our study 11 patients (52.32%) were due to secondary to obstetric trauma. Sitzler and Thomson [23] reported retrospectively on their experience with 31 patients, 20 (64.51%) of whom had incontinence secondary to obstetric trauma. Sitzler and Thomson [23] described patients were followed from 1 to 36 months after operation. Our study was 12 months follow up after procedure. Similarly, the study by Fernando, *et al.* (2002) found a significantly better outcome at 12 months follow-up when the overlapping technique was used. All patients were completely continent for stool, only few patients experimented fecal leakage usually at first month. In our study 2 patients (9.52%) persisted with loss symptoms with defect sphincter which were associated with a poorer outcome of the sphincteroplasty. In our study one patient (4.76%) was a repeat sphincteroplasty one year after procedure for persistent symptoms and achieve improved anal continence after procedure. Vaizey, *et al.* (2004) considered that the redosphincteroplasty for patients with persistent symptoms and sphincter defect after failed sphincteroplasty are effective. They recommended repeat sphincteroplasty prior to pursuit of other treatment options. Similarly, Altomare, *et al.* (2010) affirms the same conclusions by repeat sphincteroplasty. An important factor potentially affecting the outcome is the age of the patients. The literature shows that patients less than 40 or even 50 years old do much better than older patients (Rasmussen, *et al.* 1999). Our study show (42.85%) patients had less 50 years old, which explain good improved of the symptoms after procedure. Similarly, some patients of this group they affirmed sexual function, physical sensation and partner satisfaction improved after the surgery. The most common complication after sphincteroplasty was postoperative wound infection, which was experienced by (71.42%) of the participants. In our study, postoperative wound infections were associated with wound abscess (19.04%), and 10 patients (47.61%) had pain in perineal region. Zorcolo, *et al.* [24] and Karoui, *et al.* [25] found that wound infection occurred in 20-26% of patients following sphincteroplasty. However, advanced age and long-lasting severe incontinence symptoms and those patients who had longer problems with incontinence are significant predictors of outcome. This study has several limitations. It is a retrospective, case series with a relatively small number of enrolled patients existing the difficulty in the control due to distant domicile of some patients, successive of the patients for more than one year

of follow-up. The overlapping sphincteroplasty still has a positive role to play in the management of fecal incontinence and has low costs when are compare with another surgical procedure for fecal incontinence.

## Conclusion

The overlapping sphincteroplasty is an effective treatment of choice for fecal incontinent patients with defects sphincter. This procedure still has a positive role to play in the management of fecal incontinence and has low costs when are compare with another surgical procedure for fecal incontinence.

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