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Surgical Management of Fistulating Perianal Crohn's Disease – A UK Survey

MJ Lee^{1,2,3}, N Heywood^{4,5}, PM Sagar⁶, SR Brown¹, NS Fearnhead⁷ and pCD Collaborators*

1. Department of General Surgery, Sheffield Teaching Hospitals, Sheffield, UK
2. Department of Oncology and Metabolism, Medical School, University of Sheffield, UK
3. South Yorkshire Surgical Research Group
4. University Hospital South Manchester, Manchester, UK
5. North-West Research Collaborative
6. St James University Hospital, Leeds, UK
7. Addenbrooke's Hospital, Cambridge, UK

*Collaborative authors listed in appendix.

Corresponding author

Matthew Lee

Department of General Surgery, Sheffield Teaching Hospitals, Sheffield, UK

Tel: +44 (0) 114 243 4343

Fax: +44 (0) 114 256 0472

Email: m.j.lee@sheffield.ac.uk

Twitter: @wannabehawkeye

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Conflicts of interest:

The authors report no conflicts of interest.

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Abstract

Aim: Around one-third of patients with Crohn's disease are affected by Crohn's fistula-in-ano (pCD). It typically follows a chronic course and patients undergo long-term medical and surgical therapy. We set out to describe current surgical practice in the management of pCD in the UK.

Methods: A survey of surgical management of pCD was designed by an expert group of colorectal surgeons and gastroenterologists. This assessed acute, elective, multidisciplinary and definitive surgical management. A pilot of the questionnaire was undertaken at the Digestive Disease Federation 2015 meeting. The survey was refined and distributed nationally through the trainee collaborative networks.

Results: National rollout obtained responses from 133 surgeons of 179 approached (response rate 74.3%). At first operation, 32% surgeons would always consider drainage of sepsis and 31.1% would place a draining seton. At first elective operation, 66.6% would routinely insert of draining seton, and 84.4% would avoid cutting seton. The IBD multidisciplinary team was available to 87.6% respondents, although only 25.1% routinely discussed pCD patients. Anti-TNF- α therapy was routinely considered by 64.2%, although 44.2% left medical management to gastroenterology. Common definitive procedures were removal of seton only (70.7%), fistulotomy (57.1%), advancement flap (38.9%), fistula plug (36.4%) and ligation of intersphincteric track (LIFT) procedure (31.8%). Indications for diverting stoma or proctectomy were intractable sepsis, incontinence, and poor quality of life.

Discussion: This survey has demonstrated areas of common practice, but has also highlighted divergent practice including choices of definitive surgery and multimodal management. Practical guidelines are required to support colorectal surgeons in the UK.

What does this paper add to the literature?

This study describes variation in surgical management of fistulating perianal Crohn's disease across the UK, and is a first step towards establishing UK practice guidelines.

Introduction

Perianal disease affects an estimated 34% of patients with Crohn's disease, with a Crohn's fistula-in-ano occurring in around 60% of patients. [1,2]. Perianal fistulating disease (pCD) represents a significant challenge for patients, physicians and surgeons. Despite advances in treatment, long-term remission will only be achieved for two thirds of patients with simple fistulae and just a third of patients with complex fistulae [3].

Due to the paucity of large scale, well-designed, controlled trials, the majority of guidelines for managing perianal fistulating disease are based on consensus of expert opinion. Much of the published literature focuses on medical management, leaving gaps in guidance for surgeons [4,5].

A multidisciplinary approach appears to improve quality of care for patients with CD[9], however, the medical and surgical approach to its management may differ. The recent Delphi exercise by the Bowel Disease Research Foundation and the Association of Coloproctology of Great Britain and Ireland (ACPGBI) has identified the management of fistulating pCD as an area requiring further research[10]. Using the established surgical research collaboratives[11] we sought to identify variations in current surgical management of this debilitating condition.

The aim of this study was to report current colorectal practice in the surgical management of fistulating perianal Crohn's disease in the United Kingdom (UK).

Method

The survey was devised by a group of surgeons and gastroenterologists with an interest in inflammatory bowel disease (IBD), and further assessed and altered by patient consultation. The questionnaire was designed to audit practice in four areas: assessment and management of acute presentation, assessment and management of elective presentation, multidisciplinary management and definitive surgical management. Questionnaires were anonymous at respondent level.

The questions asked are included in the data tables 1-5 included in the results section. Responses were designed to be either binary (Yes/No), describe frequency using a four point scale (always, sometimes, occasionally, never), or selection of options from a menu. Where options were provided, instructions of 'select one' or 'select as many as apply' were clear, with an 'other' option provided.

A pilot of the survey was undertaken at the Digestive Disorders Federation (London July 2015), with instructions to complete the survey and to offer critique of questions where appropriate. Following critique of the questionnaire, minor clarifications were made to wording of two questions, the option set was changed for two questions to widen range of timing options, and one additional option was included in a question on treatment.

The full questionnaire was run through the UK surgical trainee research collaboratives, led jointly by the South Yorkshire Surgical Research Group (SYSuRG) and the North-West Research Collaborative (NWRC). Collaborators were asked to deliver the questionnaire to consultant colorectal surgeons in their units. Initial contact was made via the National Research Collaborative email lists and electronic contact made to local collaborative leads and cascaded locally. Collaborators were asked to support delivery of hard-copy questionnaires locally to Consultants and return at least three completed questionnaires to the Research Electronic Data Capture™ (REDCap) system, hosted by the University of Sheffield [12]. Although questionnaires were anonymous at respondent level, the number of centres and participants included was recorded by collaborators.

Numerical data from the questionnaire was collated and presented in a descriptive manner only. Where binary answers were changed to four point answers for the final study, yes and no options were analysed as 'always' and 'never' responses respectively. Free text data on indications for stoma and proctectomy were collated and representative statements reported.

Ethical approval was not required for service evaluation of current practice.

Results

In the pilot phase, 35 questionnaires were distributed and 21 were returned (response rate 60%). In the full review phase, 133 responses were received from a potential population of 179 Consultant colorectal surgeons in participating centres (74.3% response rate). Of these, 70 practised in district general hospitals and 63 in teaching hospitals, accounting for 32 different centres across the UK, including centres in Wales and Scotland. For final analysis, both phases were pooled, giving a total of 154 responses of 214 (71.9% of all distributed questionnaires).

Acute management of perianal sepsis

This section addressed patients admitted acutely with perianal symptoms. There was variation in the use of perioperative antibiotics in the acute setting, with 39.6% of respondents always using them and 5.8% never using them. Most respondents (42.2%) would start antibiotic therapy pre-operatively on the ward or in clinic, with 40.9% starting therapy at induction of anaesthesia. The antibiotic of choice was metronidazole (77.9%), followed by co-amoxiclav (35.1%) and ciprofloxacin (20.1%). Few respondents would always ask for pre-operative imaging in the acute setting (7.1%), but the majority would seek imaging frequently (37.0%) or occasionally (51.9%). Where imaging was used, magnetic resonance imaging (MRI) of the pelvis was the preferred modality (96.1%), with a small minority using endo-anal ultrasound (2.5%) or CT (1.9%).

Where the diagnosis of Crohn's disease was suspected but not yet established, respondents were asked to report which investigations they would use to confirm or refute this. Faecal calprotectin was routinely used by 22.9%, colonoscopy always used by 57.1%, flexible

sigmoidoscopy always used by 16.8% and MR small bowel by 9.7%. Conversely, 25% of respondents would never use faecal calprotectin to aid diagnosis, 3.2% would not use colonoscopy, 18% would not use flexible sigmoidoscopy, and 13.6% would not use MR of small bowel. No respondents routinely used video capsule endoscopy (VCE) to confirm diagnosis of Crohn's disease, and 40.2% would never use VCE in this setting (Table 1).

Crohn's fistula in acute setting.

We asked respondents to identify which procedures they would routinely consider in an operation for an acutely symptomatic/emergency presentation of pCD; 32% would drain sepsis, 31.1% would consider placement of a draining seton if appropriate, and 0.6% would consider excision of fistula track. The majority of respondents (89.6%) indicated that they would never consider a cutting seton in this setting (Table 2).

Respondents reported on what advice they would give to a less experienced surgeon (a general surgical colleague or registrar) undertaking surgery in this setting. Responses tended to recommend a more conservative approach with 43.5% advocating drainage of sepsis 19.5% advocating placement of a draining seton, and 94.8% advising against a cutting seton. Free text comments from two respondents indicated a feeling that only an experienced colorectal surgeon should be undertaking these procedures.

Subsequent elective surgery

The survey elicited procedure preferences for the first subsequent elective examination under anaesthetic (EUA). As in the acute setting, draining seton was routinely considered (66.6%) and cutting seton was avoided (84.4%). Where preferences were indicated, Ethibond® (Ethicon) was the preferred seton material for 41.5%, silastic slings for 24.6% and comfort drains® (Agency for Medical Innovation) in 3.2%. Other procedures such as excision of track, fistulotomy and faecal diversion were not considered options in this context by 62.9%, 35.7% and 33.1% of surgeons respectively.

If a fistula was found at EUA, 30.6% would routinely undertake post-operative MRI. If a fistula was not identified, but suspected, 63.9% would routinely undertake post-operative MRI. Routine repeat EUA would be performed by 16.5% of respondents, although 75.9% of respondents indicated that they would frequently or occasionally undertake repeated EUA, suggesting a 'selected case' approach. Post-operative antibiotics were routinely used by 11.2% of respondents, and in selected cases (frequently/occasionally) by 75.0% (Table 3).

Medical and multi-modal management of pCD

An inflammatory bowel disease MDT was available to 87.6% of respondents. Of these, 25.1% routinely discussed all cases of pCD in this setting and only 0.7% of respondents never discussed patients. A multi-modal approach utilising joint medical and surgical therapy was routinely used by 28.6% of respondents, with just 1.9% not using a combined approach (Table 4).

Gastroenterology follow-up was arranged for all patients by 71.4% of respondents.

Immunosuppressant therapy was routinely used in treatment of this condition by 32.8% of respondents, with 58.8% indicating a selected-case approach. Eight responses were excluded from this analysis as their response from the pilot survey could not be mapped to the final questionnaire.

Surgeons were asked to identify which drug(s) they would prefer a patient to receive as part of multi-modal care. Anti-TNF- α therapy was most frequently preferred (64.2%), followed by azathioprine (33.7%). Despite expressing preferences, the final decision on medical management was left with a gastroenterologist by 42.2% of surgeons. Summary of results is presented in Table 4.

The decision on seton removal was made by surgeons in 64.2% of cases, the multidisciplinary team in 33.7% of cases and by gastroenterologists in 5.8% of cases. The patient made the decision for seton removal in 4.5% of responses. A free-text option was available to report timing of seton removal. Responses indicated that this was highly variable and tailored to the patient. In some cases, timings were related to surgery e.g. 3

months post-op, and in others related to biologic therapy e.g. after third dose. Respondents also indicated that it might be left in-situ indefinitely.

Definitive Surgical Management of pCD

Eleven surgical procedures were considered as options by respondents as options to facilitate definitive closure of a fistula. The most frequently considered options were removal of seton only (70.7%), fistulotomy (57.1%), advancement flap (38.9%), fistula plug (36.4%) and ligation of intersphincteric track (LIFT) procedure (31.8%). Fistulectomy (27.9%), fibrin glue (12.9%) and local perineal flaps (7.8%) were used by fewer respondents. Early adopters of technology indicated use of over the scope clip (OTSC) (1.2%), video assisted fistula closure (VAAFT) (1.9%) and fistula-assisted laser closure (FiLaC™) (0.6%).

Most respondents used diverting stoma and proctectomy on a selected case basis, with only 12.3% of respondents never using a stoma and 12.9% never considering proctectomy. Free-text responses defining indications for these were similar with the phrase 'failed bottom' used by many respondents. This was defined as recurrent or chronic perianal sepsis, incontinence, and symptoms or proctitis refractory to medical therapy. Dysplasia and malignancy were reported as specific indications for proctectomy. Patient choice was identified by several respondents as a factor in their decision to undertake these procedures. Where proctectomy was performed, a small perineal defect would be primarily closed, but respondents preferred flap-based perineal reconstruction if a large defect remained.

A significant minority (41.5%) of respondents indicated that they would treat rectovaginal fistula. This group of respondents would use definitive procedures including advancement flap (21.5%), fistula plug (10.9%), Martius flap (9.3%), omental interposition (6.2%) and LIFT procedure (4.6%) to treat recto-vaginal fistula. A diverting stoma would be used by 6.2% of respondents. A summary of definitive options used in perianal and rectovaginal fistulae are presented in Table 5.

Discussion

This study has used a collaborative approach to assess current UK surgical practice in fistulating perianal Crohn's disease. It has identified areas of common practice, including choice of imaging modality, antibiotics and avoidance of sphincter-disrupting treatments such as a cutting seton. The survey has clearly exposed variation in practice in the management of fistulating perianal Crohn's disease.

There are limitations associated with survey-based research including responder bias. We attempted to address these in the study design by using personal contacts and trainee-consultant relationships with the opportunity for case-based discussions over impersonal electronic surveys with attendant poor response rates. Mitigation against survey fatigue due to length of questionnaire was also evident in engagement of local collaborators to deliver and complete the questionnaire. Anonymous participation in the survey may also have helped improve response rates, as there was no concern about identification or challenge related to practice. The high response rate was achieved with the support of the trainee collaborative networks.

Management of a condition with variable presentations and degrees of severity such as fistulating perianal Crohn's disease, will inevitably lead to some difficulties in achieving clear agreement around routine practice as management is rightly tailored to each case. This is reflected by the high proportion of respondents who selected 'frequently' or 'occasionally' as options.

There is little evidence on the use of antibiotics alone in the treatment of perianal Crohn's disease, with meta-analyses on the use of ciprofloxacin suggesting a marginal effect in remission of Crohn's fistula [13,14]. In combination with Adalimumab, it may offer additional benefit in healing [15]. Recent American guidelines suggest that antibiotics in perianal sepsis might be of benefit only in the immunosuppressed, or where there is systemic upset or cellulitis [16].

Magnetic resonance imaging is well established as the imaging modality of choice in perianal Crohn's disease, and has been used to guide therapy in one study [17]. Endo-anal ultrasound is not yet a widely used technology. It has a niche role here as a diagnostic adjunct in specialist hands [18], but has limitations depending on the type of fistula present [19].

Surgeons used a variety of investigations for establishing the diagnosis of Crohn's disease. Faecal calprotectin is a sensitive marker of mucosal inflammation, so may be raised in a number of non-Crohn's related scenarios [20,21]. Endoscopic assessment allows visual and histologic assessment of the colon. The split between colonoscopy and flexible sigmoidoscopy may be associated with surgeons ruling out proctitis only rather than assessing the whole colon, as proctitis is a prognostic factor in mucosal healing [4] and also in persistence of fistula.

The roles of anti-TNF- α therapy and azathioprine are well established in this setting, so their positions as drugs of choice are merited [17,22,15]. Previous work has demonstrated that steroids should not be used for pCD alone, and their use in this setting runs counter to current guidelines [23,4]. The use of steroids to treat associated luminal disease may be appropriate, and it is possible that this factor was considered when responding to questions about best medical therapy [23].

In both acute and initial elective settings, the survey shows a tendency towards conservative and sphincter-preserving procedures, in the form of drainage of sepsis and use of draining seton. Respondents widely rejected the use of cutting setons in this group of patients. Patients with pCD tend to a chronic and recurrent disease course necessitating multiple interventions, and therefore efforts should be made to preserve continence where possible [24]. The conservative advice given to less experienced surgeons suggests UK practice is aimed at avoiding iatrogenic exacerbation of fistulating disease and tends to favour management by experienced colorectal surgeons.

The removal of seton timing varied with treatment intent, although in free text comments, respondents indicated that they tended to follow one of two published UK practices [17,25].

The perceived advantage of early removal of a seton is the removal of a 'splint' maintaining patency of a fistula and allowing it to heal. The trade off is that removal too early in the treatment process might promote recurrent perianal sepsis.

There is a wide range of procedures offered as definitive surgical options for patients with pCD. Draining seton alone, fistulotomy, fistula plug and LIFT have been described in the literature, with varying outcomes, although this is mostly observational and not trial based data[26,27,24]. The variety of choice in definitive surgery may reflect in part a lack of consensus and limited evidence for the surgical management of pCD, but may also be influenced by individual surgeon expertise.

Much of the recent literature has focussed on a multimodal approach to pCD, with emphasis on sepsis control and institution of medical therapy (e.g. biologics) to aid fistula closure showing benefit over surgery alone [28,29]. Current trials are investigating various permutations of this approach [30]. It is encouraging that most respondents have access to an IBD MDT and utilise immunosuppressant drugs as part of their therapy, although only 28% routinely employ this approach. This study did not explore make-up of the IBD MDT or whether it was supported at a local or regional level.

This study reported that some surgeons do not undertake proctectomy or stoma formation, or manage Crohn's rectovaginal fistula. In light of the varied definitive options described, it is possible that a number of surgeons will simply place a seton and not offer any surgical options beyond that, perhaps preferring to refer on to specialist colleagues. Single centre experience with rectovaginal fistula, even in tertiary or quaternary centres comes from small cohorts [31,32]. As volume is associated with outcome in some aspects of colorectal surgery [33], perhaps centralisation of definitive surgery for pCD should be considered. This might offer better outcomes, but risks losing local expertise in peripheral hospitals [34].

Those who do undertake proctectomy or stoma formation broadly agreed on indications for these procedures. It is of note that patient preference or request was a recognised

indication, as quality of life in patients with pCD has been found to be improved in patients who have a stoma [35].

Conclusion

This study reports on individual surgical approaches to pCD in the context of trends in national practice. Variation in practice will have implications for design of and implementation of future research interventions in pCD. Further work is required to reach consensus on standardisation of the pCD management pathway. In the interim, early and efficient control of sepsis, multimodal pCD management, and an emphasis on sphincter-preserving surgical techniques are the current foundations of managing pCD in the UK.

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Appendix: pCD Collaborative authors (to be PubMed citable)

A Abbas, S Adegbola, M Alfa-Wali, L Ashken, P Barrow, RR Brady, D Couch, A Engledow, E Gammeri, M Gill, M Kadhum, H Kankam, S Kaptanis, P Labib, J Luck, K Majid, J Martin, A Moss, J Nicholson, MR Iqbal, B Singh, N Sengupta, C Sproson, B Stubbs, F Suker, P Tozer, G van Boxel, N Ventham.

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	Response (%)				
In the acute setting:	Always	Frequently	Occasionally	Never	Missing
Would you use antibiotics?	61 (39.6%)	45 (29.2%)	43 (27.9%)	2 (1.3%)	3 (1.9%)
	Pre-operatively	Anaesthetic induction	Post-operatively	Other	Missing
When would you start them?	65 (42.2%)	63 (40.9%)	10 (6.5%)	7 (4.5%)	9 (5.8%)
List	Ciprofloxacin	Metronidazole	Co-amoxiclav	Gentamicin	
What antibiotics would you use?	31 (20.1%)	121 (78.5%)	54 (35.1%)	22 (14.2%)	-
	Always	Frequently	Occasionally	Never	Missing
Would you obtain pre-operative imaging?	11 (7.1%)	57 (37.0%)	80 (51.9%)	5 (3.2%)	1 (0.6%)
If the diagnosis of Crohn's disease was not established, would you use:	Always	Frequently	Occasionally	Never	Missing
Faecal Calprotectin	33 (21.4%)	36 (23.3%)	39 (25.3%)	36 (23.3%)	10 (6.5%)
Colonoscopy	88 (57.1%)	45 (29.2%)	16 (10.3%)	5 (3.2%)	0
Flexible sigmoidoscopy	26 (16.8%)	37 (24.0%)	60 (38.9%)	28 (18.2%)	3 (1.9%)
Video Capsule Endoscopy	0	4 (2.6%)	83 (53.8%)	61 (38.6%)	6 (3.8%)
MR Small Bowel	0	0	23 (14.9%)	125 (81.1%)	6 (3.8%)

Table 1: Summary of initial assessment and pre-operative management of perianal

If you were doing the case, would you consider:	Response (%)				
	Always	Frequently	Occasionally	Never	Missing
Incision and drainage of abscess	50 (32.4%)	48 (31.1%)	44 (28.6%)	8 (5.1%)	4 (2.5%)
Insertion of draining seton	48 (31.1%)	61 (43.5%)	35 (22.7%)	1 (0.6%)	10 (6.4%)
Insertion of cutting seton	0	0	13 (8.4%)	138 (89.6%)	4 (2.5%)
Excision of track	1 (0.6%)	0	45 (29.2%)	104 (67.5%)	4 (2.5%)
If you were advising a colleague or registrar, would you advise:	Always	Frequently	Occasionally	Never	Missing
Incision and drainage of abscess	67 (43.5%)	46 (29.8%)	31 (20.1%)	7 (4.5%)	3 (1.9%)
Insertion of draining seton	30 (19.4%)	50 (32.4%)	60 (38.9%)	11 (7.1%)	3 (1.9%)
Insertion of cutting seton	0	0	4 (2.5%)	146 (94.8%)	4 (2.5%)
Excision of track	0	0	23 (14.9%)	125 (81.1%)	6 (3.8%)

Table 2: Practice around surgery in the acute/urgent setting.

At first planned EUA, would you consider	Response (%)				
	Always	Frequently	Occasionally	Never	Missing
Insertion of draining seton	48 (31.1%)	61 (43.5%)	35 (22.7%)	1 (0.6%)	10 (6.4%)
Insertion of cutting seton	0	0	13 (8.4%)	138 (89.6%)	4 (2.5%)
Excision of track	1 (0.6%)	0	45 (29.2%)	104 (67.5%)	4 (2.5%)
Fistulotomy	0	5 (3.2%)	88 (57.1%)	55 (35.7%)	6 (3.8%)
Faecal diversion	0	0	54 (35.0%)	53 (34.4%)	47 (30.5%)
After first elective procedure, would you routinely plan for:	Always	Frequently	Occasionally	Never	Missing
Post-operative antibiotics †	15 (11.2%)	21 (15.7%)	79 (59.3%)	13 (9.7%)	5 (3.7%)
Post-operative imaging if fistula found †	48 (36.0%)	48 (36.0%)	32 (24.0%)	1 (0.7%)	4 (3.0%)
Post-operative imaging if no-fistula found †	85 (63.9%)	33 (24.8%)	9 (6.7%)	2 (1.5%)	4 (3.0%)
Repeat EUA †	22 (16.5%)	47 (35.3%)	54 (40.6%)	6 (4.5%)	4 (3.0%)

Table 3: Summary of management around first planned examination under anaesthetic.

†Percentage based on 133 respondents from full survey as no equivalent response options used in pilot.

	Yes		No	Missing	
Do you have access to an IBD MDT?	135 (87.6%)		14 (9.1%)	5 (3.2%)	
	Always	Frequently	Occasionally	Never	Missing
Do you routinely discuss pCD patients in an IBD MDT? [†]	39 (25.1%)	58 (41.7%)	45 (32.3%)	1 (0.7%)	0
Do you arrange follow up for patients with gastroenterology?	110 (71.4%)	31 (22.3%)	9 (6.4%)	0	4 (2.6%)
Do you use multimodal approach?	44 (28.5%)	70 (45.5%)	19 (12.3%)	3 (1.9%)	18 (11.6%)
Do you use immunosuppressant drugs? ^{††}	48 (32.8%)	58 (39.7%)	28 (19.1%)	8 (5.4%)	4 (2.7%)
What drugs would you ask for to complement surgical therapy?			<i>n</i>	<i>%</i>	
	Glucocorticoid steroids		34	22.0	
	Aminosalicylates		24	15.5	
	Azathioprine		52	33.7	
	6-Mercaptopurine		16	10.3	
	Methotrexate		23	14.9	
	Anti-TNF- α therapy		99	64.2	
	Gastroenterology decide		65	42.2	

Table 4: Summary responses and multimodal management approaches used.

*Selected cases group was split into Frequently and Occasionally after pilot. [†]Percentage based on 143 respondents who replied 'Yes' to IBD MDT or missing responses (i.e. excludes those with no MDT). ^{††}8 patients excluded as option 'selected cases' removed in full version.

Procedure	Perianal Fistula (n=154)	Rectovaginal fistula (n=64)
Removal of Seton only	109 (70.7%)	-
Fistulotomy	88 (57.1%)	-
Fistulectomy	43 (27.9%)	-
Fistula Plug	56 (36.4%)	7 (10.9%)
Advancement flap	60 (38.9%)	14 (21.5%)
Fibrin Glue	20 (12.9%)	-
LIFT	46 (29.8%)	3 (4.6%)
OTSC	2 (1.2%)	-
VAAFT	3 (1.9%)	-
FiLaC	1 (0.6%)	-
Local (Perineal) Flap	12 (7.8%)	-
Martius Flap	-	6 (9.3%)
Omental interposition	-	4 (6.2%)
Diverting stoma	-	4 (6.2%)

Table 5: Definitive surgical procedures and their use in perianal and rectovaginal fistula.