

## Original Research Article

# Muscle splitting sigmoid loop colostomy: a viable option to prevent colostomy prolapse

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### ABSTRACT

**Background:** The purpose the study was to assess the incidence of Colostomy prolapse with sigmoid loop colostomies performed through rectus muscle splitting Incision.

**Methods:** Colostomy prolapse may present serious problems for patient care and stoma function<sup>6</sup>. Sigmoid loop colostomy was done for babies with High anorectal malformation (HARM) and Hirschsprung's disease (HD) from Jan2012 to Dec2014 in two referral hospitals. All colostomies were sigmoid loop colostomies and done by a single surgeon through rectus muscle splitting incision. All patients were followed up for colostomy prolapse for at least 6 months.

**Results:** A total of 110 babies managed with colostomy during the study period. The patients comprised of 68 males and 42 females. High anorectal malformation accounted for 66 babies [males 48, females 18] while Hirschsprung's disease was the surgical indication in 44 [males 20, females 24]. The age at colostomy ranged from 1 day to 4 years. A total of 32 complications were recorded in 25 patients [29%]. There were 4 deaths [3.6%]. Early complications like Haemorrhage and septicaemia was seen in 4 patients. Colostomy stenosis was observed in 3 cases requiring only dilatation. Colostomy prolapse was seen only in 3 patients [3.24%]. Skin excoriation was the commonest complication, noted in 10 patients. Failure to thrive secondary to colostomy diarrhoea was observed in 3 patients. Superficial wound dehiscence occurred in 3 babies. Urinary tract infection seen in 5 and Intestinal obstruction requiring laparotomy occurred in one baby.

**Conclusions:** Colostomy prolapse is very common after loop colostomies. Rectus muscle splitting incision for loop colostomies is safe and is associated with low incidence of colostomy prolapse.

**Keywords:** Anorectal malformations, Hirschsprung's disease, Loop colostomy

## INTRODUCTION

Colostomy in neonates and children is associated with high incidence of complication.<sup>1-3</sup> Prolapse remains an unsolved problem bedeviling loop colostomies and its management is always a challenge to the surgeon.<sup>4,5</sup> Colostomy prolapsed may present serious problem for patient care and stoma function.<sup>6</sup> Though divided sigmoid colostomy was advised in babies With HARM by Pena et

al, we prefer loop colostomy as it was quick to perform and easy to close and found it was very useful in our setup.<sup>7</sup> Initially we used to site sigmoid colostomy in left iliac fossa with muscle cutting incision and found higher incidence of colostomy prolapse and major wound dehiscence. We modified our technique to rectus muscle splitting sigmoid loop colostomy. The aim of the study was to assess the incidence of colostomy prolapse in

sigmoid loop colostomies performed through rectus muscle splitting incision.

## METHODS

One hundred and ten patients managed with sigmoid loop colostomy during the period between February 2012 to March 2014 in medical college hospital were evaluated. Babies with High anorectal malformations and classical recto sigmoid Hirschsprung's disease in whom muscle splitting incision used, were included in this study. All surgeries were performed by a single surgeon during the study period. Babies with low anorectal malformations, long segment Hirschsprung's and Colostomies done for other problems like necrotizing colitis, intussusception, trauma, intestinal obstruction, where laparotomy was done were excluded from the study. All babies were followed up for at least 6 months after surgery for colostomy prolapsed and other complications.

**Procedure:** under general anaesthesia 3cm skin incision was given 4cm below and left to the umbilicus. Anterior rectus sheath opened in the line of incision. Rectus muscle split and posterior rectus sheath divided in the line of incision. Sigmoid colon identified and loop of the colon isolated. Biopsy was taken from rectum and colon at the site of colostomy, in suspected cases Hirschsprung's disease. Two to three anchoring sutures were applied to both afferent and efferent loops with absorbable suture and colon was fixed to the muscle with again absorbable suture. Colon opened, and edges everted and sutured to the skin. No skin bridge or tube was used.

## RESULTS

One hundred and ten babies managed with colostomy during the study period were evaluated. There were 66 neonates with high anorectal malformation, male babies 48 and female babies 18 with male to female ratio 3:1. Hirschsprung's disease was surgical indication in 44 patients. Males 20 and females 24 with male to female ratio 1:1.3. The age at colostomy ranged from 1 day to 5 days in babies with anorectal malformations whereas it is ranged from 1 day to 5 years in babies with Hirschsprung's disease. A total of 32 complications were recorded in 25 patients [29%]. There were 4 deaths [3.6%]. None of the death were directly related to colostomy. Three babies who died had multiple anomalies. one preterm baby with 1.4kg died of sepsis. Early complications like Haemorrhage and septicemia was seen 4 patients. Colostomy stenosis was observed in 3 cases requiring only dilatation. Colostomy prolapse was seen only in 3 patients [2.7%]. Skin excoriation was the commonest complication occurred following colostomy occurred in 10 babies. Failure to thrive secondary to colostomy diarrhoea was observed in 3 patients, two of them had short colon. Superficial wound dehiscence secondary to wound infection was observed in 3 babies. Intestinal obstruction requiring laparotomy occurred in one baby. Five babies with HARM had urinary tract

infection requiring antibiotic prophylaxis. No parastomal hernias and no major wound dehiscence requiring redo were observed (Figure 1 and Figure 2).



**Figure 1: Colostomy with muscle cutting incision.**



**Figure 2: Colostomy with rectus muscle splitting incision.**

## DISCUSSION

Anorectal malformation is the most common surgical emergency in the developing world, partly because rapid abdominal distension alerts the parents and local pediatricians than the other congenital malformations.<sup>8</sup> This life saving operation is not a minor procedure and many of its complications are preventable with good surgical technique and qualitative follow up care.<sup>9,10</sup>

Because of high incidence of prolapse, loop colostomies were associated with high incidence of complication than divided stomas.<sup>11-13</sup> Recent reports (2014) by Oda O et al showed complication rate of 31.5% and prolapse rate of 17.8% in 144 babies with loop colostomies.<sup>14</sup> Another

recent study (2014) by Van den Hondel showed complication rate of 63% and prolapse rate of 18% with

loop colostomies in 180 of their babies with anorectal malformations.<sup>15</sup>

**Table 1: Collected results of colostomy complications in children.**

Complication	Mollitt et al. (N=146)	Lister et al (n=156)	Al-Salem et al (n=77)	Nour S et al (n=138)	Present study (n=110)
Mortality	2.7	3.8	2.7	0.7	3.6
Prolapse	11.6	12.0	18.9	18.8	2.7
Stenosis	6.2	6.4	2.7	1.4	3.24
Retraction	3.4	1.9	2.7	2.9	1.8

In present study 25 babies developed complications (29%) and only 3 babies (2.7%) had prolapse which is favorably comparable with above recent studies (Table 1). We routinely use loop colostomy as it is easy to perform, less time taking, and it is easy to close. It is well suited in our setup because many of our patients present very late and emergency colostomy is performed to relieve respiratory compromise, where the procedure should be simple and quick. The low incidence of colostomy prolapses and no major wound dehiscence in our patients is attributed to rectus muscle splitting incision. Good muscle tone around colostomy and anchoring of afferent and efferent loops to each other with few absorbable sutures may be the reason for decreased incidence of prolapse in our patients.

## CONCLUSION

Colostomy prolapse is very common after loop colostomies. Rectus muscle splitting incision for loop colostomies is safe and is associated with low incidence of colostomy prolapse, parastomal hernias and major wound dehiscence.

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