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Ostomy Bag and Betel Leaf in Pediatric Stoma Care

Dr. Bipul Bhusan Das[1*], Dr. Md. Ashraf Ul Huq[2], Dr. Md. Tawhidul Islam[1], Dr. Sadruddin Al Masud[1]

[1]Assistant Professor, Department of Pediatric Surgery, Dhaka Medical College & Hospital, Bangladesh
[2]Professor & Head, Department of Pediatric Surgery, Dhaka Medical College & Hospital, Bangladesh

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***Corresponding author:** Dr. Bipul Bhusan Das
Assistant Professor, Department of Pediatric Surgery, Dhaka Medical College & Hospital, Bangladesh

Abstract **Original Research Article**

Background: Construction of a stoma is a common procedure in pediatric surgical practice. For care of these stomas, commercially available devices such as Ostomy bag, either disposable or of longer duration are usually used. These are expensive, particularly in countries like Bangladesh, and proper-sized ones are not always available. We have found an alternative for stoma care, betel leaf, which is suitable for Bangladeshis. ***Objective:*** The main objective of this study was to compare between Ostomy bag and betel leaf in Pediatric stoma care and also comparison of skin excoriation between Ostomy bag and betel leaf using in pediatric stoma care & comparison of cost and care givers satisfaction of the study groups. ***Materials and Methods:*** A total of 60 patients having various types of stoma within the age of 12 years were included in the study and randomly assigned to 2 groups – group 1 with Ostomy bag (30 patients) and group 2 with Betel leaf (30 patients). After construction of stoma, at first zinc oxide paste was applied on the Peristomal skin. A betel leaf with shiny, smooth surface outwards & rough surface inwards was put over the stoma with a hole made in the center according to the size of stoma. Another intact leaf covers the stomal opening. When bowel movement occurs, the overlying intact leaf was removed & the faecal matter was washed away from both. The leaves were reused after cleaning. Use of commercially available Ostomy bag (e.g., Convatec ostomy bag) with Adhesive paste (Stomahesive) will be applied on the Peristomal skin. ***Results:*** Out of 60 pediatric patients, 20 had pelvic colostomy, 19 had transverse colostomy and 21 had ileostomy. Of 60 patients under stoma care Mild excoriation had seen 21.7% cases of ostomy bag group and 13.3% cases of betel leaf group. Only 5% cases of ostomy bag group had moderate excoriation (P value was 0.116 which was not significant).Out of 40% excoriation, 30% occurred in ileostomy (p value <0.0001, hence significant). Average daily cost for each patient of ostomy bag was BDT43.77 (US$0.65 cents) and in case of betel leaf was BDT13.33 (US$0.20cents). P value was < 0.0001 and very highly significant. This indicated that betel leaf was cost effective in compare with ostomy bag in pediatric stoma care.31.7% care givers of both the study groups were satisfied ,only 13.3% care givers of betel leaf user group were strongly satisfied.18.33% and 5% care givers were neither satisfied nor dissatisfied in ostomy bag and betel leaf group respectively. Here p value was 0.002 and it was <0.05, hence significant. It indicated that there was significant difference of care givers satisfaction between the study groups .i e. Betel leaf using care givers were more satisfied and complying than that using ostomy bag. ***Conclusion:*** In pediatric stoma care, betel leaves are cheap, easily available, familiar, easy to handle, nonirritant, nonallergic and effective alternative of commercial appliances to protect the stomas and peristomal skin.

Keywords: Ostomy Bag, Betel Leaf, Pediatric Stoma Care.

INTRODUCTION

Various congenital and acquired conditions require stoma construction [1]. Anorectal malformations, Hirschsprung disease, intestinal atresias, enterocolitis, intussusceptions, enteric fever, and ascariasis cause fecal diversion. 1 in 4000 births has anorectal malformations [2].

Temporary and sometimes permanent small and large intestine stomas are used to treat surgical and nonsurgical pathologies in neonates, infants, and children. Except for feeding and antegrade enema access, half of all stomas are placed in neonates and a quarter in infants younger than 1 year. Stoma care is part of stoma management. To maintain skin integrity around the wound and for easy handling, a comfortable stoma device is needed. Ineffective stoma care for low-gestational-age infants, inconsistent among caregivers, and ineffective at containing effluent or preventing complications. Nonappliance and appliance ostomy care

are used including excoriation, fungal infections, and allergic reactions.

Stoma management in children follows the same basic principles as in adults, but indications and techniques differ, especially in early infancy for congenital abnormalities. Most stomas were temporary. But psychological and social care must be individualized.

Most parents can't carry one or two stoma appliance sets per week. Keeping a stoma appliance in place in children, especially younger ones, is difficult. Regular distal loop irrigation prevents rectosigmoid fecaloma in ARM, HD, and meconium ileus. Lack of abdominal wall space makes it difficult to fit a wafer-based collecting bag in neonates and small children. Instead a single-piece stoma bag with adhesive is applied. Distal loop irrigation isn't possible with the stoma bag in place. Buying one or two bags a day is expensive for parents. Skin barriers, adhesives, powders, vented pouchesand odor control solutions help ostomates [3].

Because of betel leaf is familiar, it's easier to handle, apply, and remove from the stoma. Sometimes its scent masks feces. Betel leaves come in various sizes, whereas colostomy bags aren't always available. The leaf's cut edge doesn't curl or soften, preventing stoma irritation. It's rippable. In India, betel leaf is used for colostomy care in anorectal malformations.

One betel leaf (Piper betel) with a central hole equal to the stoma size and the other placed over the exposed gut mucosa serves two purposes: (a) It prevents direct contact of effluent with the Peristomal skin and (b) the other leaf prevents contact and friction of the stomal mucosa with patients' clothing. Smooth betel leaves soothe skin and mucosa. Removing the stoma leaf simplifies distal loop irrigation [4].

OBJECTIVE

The main objective of this study was to compare between Ostomy bag and betel leaf in Pediatric stoma care. In addition, comparison of skin excoriation between Ostomy bag and betel leaf using in pediatric stoma care& comparison of cost and care givers satisfaction of the study groups.

MATERIALS & METHODS

In this study, randomized controlled clinical trial was executed. Participants were randomly allocated in two groups Stoma bag group (Group 1) and, Betel leaf group (Group 2). Randomization was done using sealed envelopes, prepared before starting the study. Envelop contained name of a single group. This study was conducted at the department of pediatric surgery, Dhaka Medical College and Hospital, over a period of 24 months January, 2014 to December 2015.This hospital is a tertiary level government hospital with a huge number of patients coming all parts of the country.

Patients within 12 years having temporary loop colostomy or ileostomy in the pediatric surgery units of Dhaka Medical College & Hospital within the study period were considered as the study population. To determine the sample size, this formula $n=t^2$ X p (1-p)/m^2 was followed.

Clinical judgment was used to select study population sample units until the desired sample size was reached. When a patient was admitted and needed a temporary ileostomy or colostomy, their guardians were informed and informed consent was obtained.

Sixty envelops with study group names were used (stoma bag group or betel leaf group). Thirty envelopes held stoma bags. Betel leaf group had 30. Each patient's guardian was asked to give the investigator an envelope. Each participant was placed in a study group based on the envelope.

Due to the short study period and age of the participants, 60 patients were used-30 in each group. The principal investigator collected data and investigated at Dhaka Medical College and Hospital. Data was collected on a sheet. In each case, patient information was collected in a prescribed questionnaire after getting written consent from parents or legal guardians. After admission, each patient was examined and pertinent information noted.

General questionnaire, clinical examination, operative findings and follow up these particular 4 types of tools were used to collect data.

Zinc oxide paste was applied to the peristomal skin after stoma construction. A betel leaf with a smooth, shiny outside and a rough inside was placed over the stoma with a hole in the center. The hole fit the stoma snugly. Another leaf covers the stoma. When a bowel movement occurs, the intact leaf and feces are removed. Clean leaves were reused. Children had follow-up visits at the pediatric surgery ward during the study period.

Statistical analysis was performed using SPSS version 23 and results were tabulated. Clinical features were analyzed descriptively, and results were presented as mean standard deviation, X2-test for proportional differences, and unpaired Student's t-test for mean differences. All two-sided values were significant if p 0.05.

RESULTS

Table 1: Age distribution of participants (Days)

Age	Stoma bag group (n=30)	Betel leaf group (n=30)	P value
Days	(1-4320)	(1-3960)	0.033
Mean ± SD	(1339.73 ±1470.19)	(721.70 ±1227.64)	

Age range was 1 day to 4320 days in stoma bag group and 1 day to 3960 days in betel leaf group. Mean age stoma bag and betel leaf group was 1339.73±1470.19 days and 721.70±1227.64 days respectively. Significant age difference was seen between the groups as p value was <0.033 which is highly significant.

Table- 2: Sex distribution between the study groups

Gender	Using stoma bag	Percentage	Using betel leaf	Percentage	P value
Male	18	60%	23	76.6%	0.017
Female	12	40%	7	23.3%	

Out of the total 60 patients, 41 were male (more than 50%) and 19 were female. Seventy six percent patients in betel leaf group were male. This difference in sex distribution between the study groups was statistically significant (P value -0.017). In stoma bag group male=60% and female=40%.

Table-3: Use of ostomy bag and betel leaf in different enterostomas

Types of enterostoma	Number of enterostoma	Ostomy bag users	Betel leaf users
Sigmoid colostomy	20 (33.33%)	7 (35%)	13 (65%)
Transverse colostomy	19 (35%)	9 (47.37%)	10 (52.63%)
Ileostomy	21 (31.67%)	14 (66.67%)	7 (33.33%)

Out of the 60 patients, 20 had sigmoid colostomy, 19 had transverse colostomy and 21 had ileostomy. Table-3 shows the number of different types of stomas and the use of ostomy bags and betel leaves in them.

Figure 1: Stoma care with betel leaf of a neonate

Figure 2: Stoma care with a betel leaf of a neonate

Figure 3: Stoma care with betel leaf

Table-4: Comparison of skin excoriation between the study groups

Method of stoma care	Healthy skin	Mild excoriation	Moderate excoriation	Severe excoriation
Ostomy bag	17 (28.3%)	13 (21.7%)	3 (5%)	0
Betel leaf	19 (31.7%)	8 (13.3%)	0	0

Table 4 shows that quantitative assessment of the skin excoriation level was done in all patients to see depth of Peristomal skin excoriation. 60% patients of both study groups had healthy skin. Mild excoriation had seen 21.7% cases of ostomy bag group and 13.3% cases of betel leaf group. Only 5% cases of ostomy bag group had moderate excoriation. Comparison was done by chi-square test.

Table-5: Skin excoriation in different types of stoma in two groups

Type of stoma	Number	Healthy	Mild excoriation	Moderate excoriation	Ostomy bag user group	Betel leaf user group	P value
Sigmoid colostomy	20	18 (30%)	2 (3.33%)	0	7	13	
Transverse colostomy	19	15 (25%)	4 (6.65%)	0	9	10	<
Ileostomy	21	3 (5%)	15 (25%)	3 (5%)	14	7	0.0001

Table -5 Reveals 60% of patients had no Peristomal skin excoriation, 35% had mild excoriation and only 5% had moderate excoriation in different types of enterostoma in the study groups. Qualitative assessment of the skin excoriation level was done in all patients to see depth of Peristomal skin excoriation in different enterostomas. P value was <0.0001, hence significant, more peristomal excoriation in ileostomy.

Figure 4: Stoma care with stoma bag

Table-6: Comparison of cost between the study groups

Average daily Cost (taka)	Ostomy bag group (n=30)	Betel leaf group (n=30)	P value
Mean± SD	43.77±5.46	13.33 ±0.88	
Range	49.23-38.31	14.21-12.45	<0.0001[s]

Average daily cost of ostomy bag was BDT43.77 (US$0.65 cents) and in case of betel leaf was BDT13.33(US$0.20cents).Comparison was done by independent sample t-test and P value was < 0.0001and very highly significant.

Table-7: Comparison of care givers satisfaction score between the study groups

	Care givers satisfaction score			P value
Method of stoma care	5	4	3	
Ostomy bag group	0	19 (31.7%)	11 (18.33%)	
Betel leaf group	8 (13.3%)	19 (31.7%)	3 (5%)	0.002

Qualitative assessment of care givers satisfaction score was done among all care givers 31.7% care givers of both the study groups were satisfied, only 13.3% care givers of betel leaf user group were strongly satisfied.18.33% and 5% care givers were neither satisfied nor dissatisfied in ostomy bag and betel leaf group respectively. Chi-square test was done and p value was 0.002 and it was <0.05, hence significant.

DISCUSSION

Problems with stoma construction, care, and closure are common. They cause morbidity and mortality. Analysis of pediatric series reveals 50% complication rates [5].

A child's enterostoma disrupts normally and often causes psychological trauma for the child and parents. Most decompressing intestinal stomas in children are temporary, and correction of the underlying problem leads to closure. Except for feeding access, more than half of stomas are placed in neonates and a fourth in children under 1 year old [6].

Both groups included neonates, infants, and children ages 1 day to 4320 days in the stoma bag group and 1 day to 3960 days in the betel leaf group. p value for age difference was 0.033.

76% of the betel leaf group and 60% of the ostomy bag group were male. This difference in sex distribution was statistically significant (P value - 0.017).

Preoperative preparation is best for an enterostoma [7]. Before leaving the hospital and at follow-up visits, parents and older children must be taught and reassured. Ileostomies and colostomies require pouches. A plant leaf has been recently suggested as an alternative [8].

A good number of patients have colostomy or ileostomy as a part of a staged procedure during correction of complex surgical problems involving the gastrointestinal tract. Dressing of such enterostomy stomas with betel nut leaves (pan) is a very cheap and effective option, especially in developing country like India [9].

Medical records of colostomy patients reveal stomal and peristomal complications. Maceration, bleeding, ulceration, necrosis, prolapse, retraction, or stenosis is stomal complications. Peristomal complications include contact dermatitis, folliculitis, mechanical damage, hyperplastic granulation, bacterial and candidal infection, and parastomal hernia. 15.5% of Peristomal patients develop irritant contact dermatitis [10].

In this study 60% patients of both study groups had healthy skin. Mild excoriation had seen 21.7% cases of ostomy bag group and 13.3% cases of betel leaf group. Only 5% cases of ostomy bag group had moderate excoriation. P value was 0.116 which was >0.05, hence not significant. This indicated that there was no significant difference of skin excoriation between the study groups.

In this study all 3 moderate excoriation and 15 mild excoriations had in ileostomy cases which were 30% of all cases. 6.65% and 3.33% had mild excoriation in transverse colostomy and sigmoid colostomy respectively. Moreover, 60% of patients had no peristomal skin excoriation. P value was <0.0001, hence significant, more peristomal excoriation in ileostomy.

All caregivers' satisfaction was rated. Only 13.3% of betel leaf users were strongly satisfied. 18.33% of Ostomy bag and 5% of betel leaf caregivers were neither satisfied nor dissatisfied. 0.002 was 0.05, thus significant. It showed a significant difference in care giver satisfaction between groups. Betel leaf caregivers are happier than Ostomy bag caregivers. These problems can cause embarrassment, distress, pain and discomfort [11].

This study had flaws. It was conducted in one institution, so the results may not reflect the whole population. Short study period and sample size. Due to

transportation issues and remote locations, follow-up could not be maintained in all cases.

CONCLUSION

Proper care of a colostomy or ileostomy and the adjacent skin requires a commercial stoma bag. In a developing country like Bangladesh, parents can't afford to buy stoma appliances regularly. Small towns and rural areas don't have easy access. Betel leaf can be used as a cheap, easily available, nonirritant and effective alternative to stoma appliances in pediatric patients.

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