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Case Report

Enterocutaneous fistula mimicking subcutaneous emphysema after stoma closure: a rarity

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ABSTRACT

Enterocutaneous fistulas, abnormal connections between the intestinal tract and the skin, are rare but serious postoperative complications associated with significant morbidity. This case presents a one-year-old male with anorectal malformation who developed subcutaneous emphysema secondary to an enterocutaneous fistula after colostomy closure and concurrent ureteric reimplantation. The fistula was managed with surgical excision and end-to-end bowel anastomosis, leading to full recovery with no recurrence. This report highlights the importance of considering rare differentials like enterocutaneous fistula in cases of subcutaneous emphysema at the wound site. It also underscores the complexity of managing multiple surgical procedures in pediatric patients and the importance of considering staged surgeries when feasible to reduce postoperative complications and improve outcomes. Timely diagnostic measures such as lateral abdominal X-ray played a critical role in early recognition and successful management.

Keywords: Anorectal malformation, Congenital, Enterocutaneous fistula, Nutrition, Paediatric

INTRODUCTION

An enterocutaneous fistula is an abnormal connection that forms between the intestinal tract and the skin. These are most often seen in the postoperative setting and are associated with significant morbidity and mortality.[1] Its incidence post-colostomy closure is approximately 2.9%.[2] Management typically involves a three-phase approach: stabilization, supportive care, and definitive intervention.[3]

In this case, along with colostomy closure, ureteric reimplantation was performed in the same surgical setting, which could have contributed to the complication. Combining gastrointestinal and urological surgeries in pediatric patients can increase the risk of postoperative complications, and staged procedures are often recommended to minimize these risks.[4] This report discusses a rare presentation of subcutaneous emphysema resulting from an enterocutaneous fistula in a pediatric patient following colostomy closure for anorectal malformation.

CASE REPORT

A one-year-old male child with history of colostomy for anorectal malformation, presented on his first day of life with absent anal opening, abdominal distension and failure to pass meconium. Physical examination revealed anatomical anomalies consistent with an anorectal malformation, for which colostomy was done.[5] The postoperative course was uneventful, and the patient was discharged without complications.

During follow-up, the stoma remained healthy. VACTERL workup revealed left multicystic dysplastic kidney, right-sided grade 5 vesicoureteric reflux, and asymmetric dilation of the right lateral ventricle of brain. A distal pressure-augmented cologram demonstrated a

recto-bulbar fistula, and at 8 months of age, the patient underwent posterior sagittal anorectoplasty. Postoperative recovery was uneventful.

At 14 months, the patient underwent cystoscopy with double J stent placement, Lich-Gregoir right ureteric reimplantation, and colostomy closure. Intraoperatively, the bowel wall appeared healthy. Enteral feeds were started on the second postoperative day and gradually increased to full feeds. The wound developed foul-smelling discharge (Figure 1) on POD 4, positive for *Enterococcus faecium* and *Escherichia coli*. The pus discharge resolved with conservative management, following which the patient was discharged on POD 7 from inpatient care and scheduled for regular follow-up visits.

During follow-up after 7 days, it was noted that the patient had swelling at the colostomy closure site. Examination revealed a soft, non-tender abdomen with crepitation extending to the left hypochondrium and epigastrium. After suture removal on an outpatient basis, the swelling subsided, and the patient was monitored with follow-ups scheduled every 15 days.

After 1 month of surgery, patient presented to emergency department with complaints of multiple, non-bilious vomiting, low grade fever, inadequate passage of stool, and subcutaneous emphysema at the wound site, diagnosed using lateral X-ray (Figure 2), eliminating the need for CECT. The patient was having fever of temperature 100 F. White blood cell count was elevated to 25,990. He was kept on empirical intravenous antibiotics. Blood cultures were negative. After five days of conservative management, symptoms did not resolve and exploratory laparotomy was planned. During the exploratory laparotomy, a pus pocket of 15 ml with gas was found in the subcutaneous plane at the colostomy closure site. The anterior wall of the anastomosed bowel was dehiscent and adhered to the anterior abdominal wall, forming a fistula. Excision of the enterocutaneous fistula and end-to-end bowel anastomosis were performed (Figure 3). Postoperatively, the patient was managed with intravenous fluids, antibiotics, and analgesics. No swelling or discharge from incision site was noted.

Nutritional management included early total parenteral nutrition for adequate calories and protein, minimal enteral feeds to maintain gut integrity, and gradual reintroduction of high-protein, easily digestible enteral nutrition post-surgery.[6] Electrolyte balance and micronutrient supplementation (zinc, vitamins A, C, E) were essential for wound healing and recovery. Subcutaneous emphysema did not recur in post operative period and patient was discharged after 3 days of establishing full enteral feeds (POD 5). Patient was kept on follow up every 15 days post operatively during the 1st month and after that 3 monthly regular follow up.[7,8] There was no further specific complaint about the concerned issue.

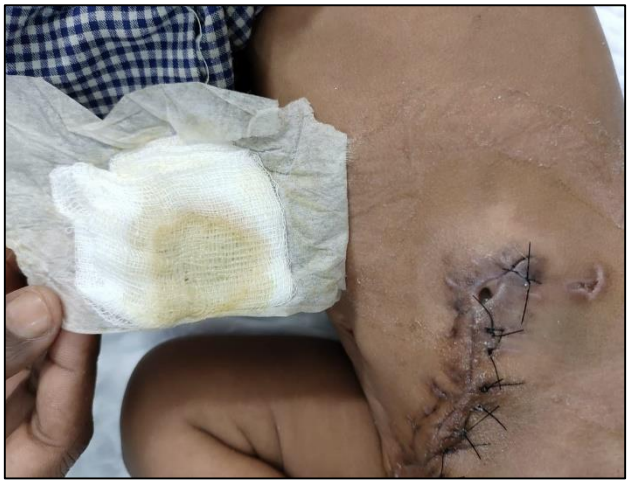

Figure 1: Clinical image of pus discharge at colostomy closure site.

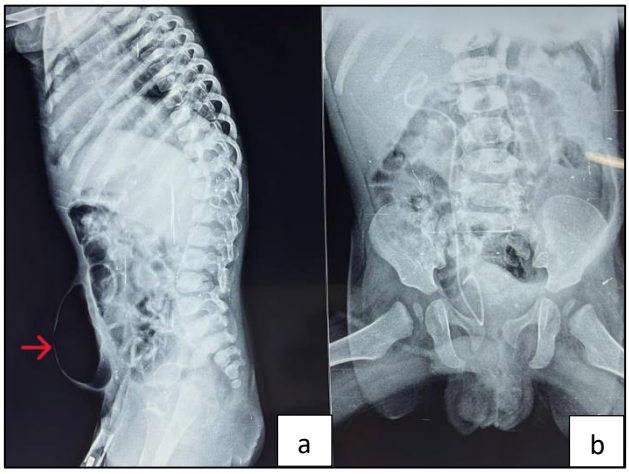

Figure 2 (a and b): Lateral abdominal X-ray showing distended bowel loops and subcutaneous emphysema (red arrow).

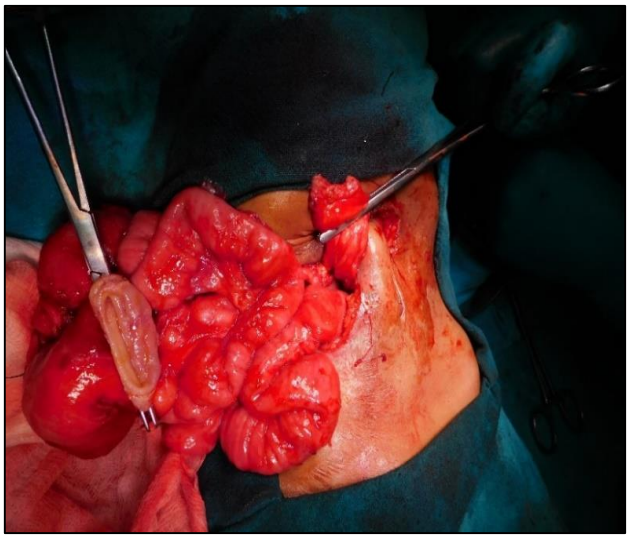

Figure 3: Intraoperative image showing dehiscent bowel wall for anastomosis.

DISCUSSION

Subcutaneous emphysema occurs due to the accumulation of air within the subcutaneous tissue. It is commonly caused by mediastinal trauma or lung injuries. Pediatric enterocutaneous fistulas are uncommon and may arise from surgical technique, infection, or tissue fragility.[9] The incidence of enterocutaneous fistulas following gastrointestinal surgeries ranges from 5% to 25%, depending on the underlying condition and surgical context.[10] While most cases respond to conservative management, surgical correction is warranted in refractory cases.[11] This case highlights the importance of including enterocutaneous fistula in the differential diagnosis when subcutaneous emphysema is noted at a postoperative scar. Early diagnosis through upright and lateral X-ray films facilitates timely surgical intervention, reducing morbidity. This case also emphasizes the importance of nutritional management during recovery and the role of close postoperative follow-up.

Additionally, the concurrent gastrointestinal and urological procedures may have increased the risk of complications, highlighting the need to consider staged surgeries in complex pediatric cases.

CONCLUSION

We encountered a case of enterocutaneous fistula following colostomy closure and concurrent ureteric reimplantation in a pediatric patient with anorectal malformation. Despite initial conservative management, the fistula persisted, necessitating surgical intervention. The final surgical strategy involved excision of the enterocutaneous fistula and end-to-end bowel anastomosis, which resulted in complete recovery without recurrence. Reflecting on this case, staged surgical procedures and postoperative monitoring are crucial to prevent similar complications and ensure optimal patient outcomes.

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