

Case Report

## **Meleney's Ulcer; A Rare but Fatal Abdominal Wall Disease Complicating Laparotomy**

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### **Summary**

Meleney's ulcer or post operative synergistic bacterial gangrene is a rare form of abdominal wall gangrene but has well documented clinical entity. It develops following intra abdominal surgery in the immediate vicinity of the surgical wound. It is caused by synergistic interaction between microaerophilic nonhemolytic Streptococcus and haemolytic aerobic staphylococcus aureus. We report development of meleney's ulcer on the third post operative day in a 79 year old lady admitted to our hospital and the challenges of her care. We wish to share the challenges appreciated in making the diagnosis and the difficulties of management. The diagnosis of post operative synergistic gangrene requires high index of suspicion, while early diagnosis and aggressive management predicts good outcome.

**Key Words:** Meleney, Postoperative, Synergistic, Gangrene.

## **Introduction**

Post operative synergistic abdominal wall gangrene has a wide geographical distribution and has clear distinction from other types of skin infections (1, 2). It is caused by bacterial synergism between microaerophilic non haemolytic streptococci and haemolytic staphylococcus aureus (1, 3) and affects the skin and subcutaneous tissues sparing the deep fascia except in advanced cases (4). The mortality rate in this post operative synergistic gangrene can reach 90% in patients with co-morbidities like diabetes.

## **Case Summary**

We admitted a 79 year old lady in our hospital with complaints of abdominal pain, vomiting and inability to pass stool for one week. The patient was found to be dehydrated and weak, BP- 100/60 mm Hg, pulse rate 94 /min and temperature of 37.5°C. On abdominal examination a strangulated inguinal hernia was found on the right groin .After initial resuscitation, a laparotomy was done and resection and anastomosis of small gut was done.

On third post operative day, the patient was found to be improving, bowel sounds were present and oral sips were allowed, surgical site dry and healing well, but for some tender erythematous lesion with a central zone of purplish discoloration on the right flank (fig 1). On 4th post operative day, the central zone had progressed to necrosis and erythema spreading outwards was increased (fig 3). Serous fluid samples were taken for microscopy culture and sensitivity.

On 5th post operative day, there was flank gangrene forming a suede leather-like cover over the lesion with a sharp margin demarcating the purplish zone (fig 4). The purplish zone faded into the erythematous zone. The impression of post operative synergistic bacterial gangrene was entertained. Tissue biopsy was taken from the extending margins of the lesion for microscopy culture and sensitivity.

Broad antibiotic cover with ceftriaxone, levofloxacin and metronidazole was initiated. Dermazine dressing of the wound was also done daily.

The wound became dry, surrounding edema resolved and necrotic margins were well demarcated. There was no further extension of the lesion. Streptococcus aureus was grown from the serous fluid sample but it was not possible to get tissue biopsy culture on financial constraint to the patient.

The intra abdominal process was recovering as evidenced by persistent bowel sounds as from the third post operative day. The patient confirmed passage of flatus and two loose bowel motions were observed. The patient had severe anemia of 4.0g/dl and received six pints of whole blood during the period. The blood pressure remained 100/60 mmHg. On the tenth post operative day we observed progressive deterioration of mental status and the patient was unable to feed. The

patient was transferred to high dependency unit. Central venous catheterization and parenteral nutrition were initiated. Unfortunately our patient succumbed on 16th day post operation.

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## **Discussion**

Meleney's gangrene has been reported to occur in ileal stoma (4), perforated appendix, genitourinary disease and colectomy after ulcerative colitis (5-7). The disease is not always postoperative (1). Any break in skin may permit secondary contamination with these organisms and if they become established may produce the characteristic features of this clinical entity (1). Our case shows a patient who was recovering well from the surgery for a strangulated hernia but started deteriorating when a skin lesion was noted. Meleney et al in 1931 observed a period when intraperitoneal focus would cease and progress toward recovery before the skin disease begun (3). However there is no record of full recovery from the intra-abdominal pathology before the onset of the disease. While the lesion in our patient was identified on the 3rd day, onset (from intra abdominal operation) varies from two to fourteen days (1, 8). Most authors agree that early stages of the disease may not be clearly different from other skin infections, however as the disease progresses it takes on certain clinical aspects which are unmistakable (1-3, 5). This necessitates every surgeon to be aware of its possibility in post operative patients so as to make an early diagnosis to avert the onset of gangrene and its attendant complications.

Tissue biopsy was taken from the extending margins of the lesion and we hoped to culture the fastidious microaerophilic non hemolytic streptococci in a reputable laboratory, unfortunately due to financial constraints to the patient this was not possible. Microaerophilic non haemolytic streptococcus in the spreading periphery is one of relatively low virulence and the establishment of infection depends upon the coincident presence of a haemolytic staphylococcus aureus capable of producing gangrene in tissue already inflamed by the non haemolytic microaerophilic streptococcus (1).

Until 1945 this infection was managed by wide surgical excision followed by reconstructive surgery usually by split thickness skin graft or a groin flap as described by David A. Bowder 1982 (1,4). However, this frequently failed if the margin was not wide enough or if they became established again on the surface of the wound (1, 8). Meleney et al in 1945 were able to successfully treat the disease with penicillin obviating the need for excision (9). Cases that were resistant to penicillin were managed by systemic administration of bacitracin (1). Other agents that have been used include Silver diazine, iodine, zinc peroxide, neomycin-bacitracin exposure to direct sun rays and x-rays (1, 8). Topical antimicrobials have no role without excision of the lesion. Grainger et al in 1967 were able to successfully treat two patients with five one hour sessions in a hyperbaric oxygen chamber (8).

The medication in our patient was guided by available antibiotics covering for staphylococcus with ceftriaxone, gram negative cover with levofloxacin and anaerobes with metronidazole. The

patient had been initially on penicillin. Disease control is usually evidenced by resolution of edema, halting of extension and return of normal skin color (1, 3). In our patient, the extension halted and surrounding edema resolved by fifth day. Excision of the lesion was planned with skin grafting. Necrotizing fasciitis can readily be confused with Meleney's gangrene, but it is a much more acute and highly toxic infection which causes widespread necrosis and undermining of the surrounding tissues (10). The main distinguishing feature is the extensive necrosis of the superficial fascia (10).

## **Conclusion**

Though rare, post operative synergistic bacterial gangrene is a possibility and requires high index of suspicion, early diagnosis and aggressive management to get a good outcome.

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Fig 1. Third day post operative image. Surgical wound dry but for a right flank erythema.



Fig 2. Close image of erythematous lesion with central zone of Purplish discoloration on the right flank.



Fig 3. Sharp demarcation of the gangrene with purplish margin. Purplish zone fades into the erythematous zone.



Fig 4. Formation of a suede leather-like cover on 5<sup>th</sup> post operative day.