


## Case Report

**Meleney's Gangrene following laparoscopic appendicectomy managed with tailor-made surgical approach**Kasun Gunathilaka<sup>1\*</sup>, Nilupul Supun<sup>2</sup>, Sudesh Buddhika<sup>2</sup>, Mangala Kulasekara<sup>2</sup><sup>1</sup> Post Graduate Institute of Medicine, Sri Lanka<sup>2</sup> Teaching Hospital, Anuradhapura, Sri Lanka

Meleney's gangrene is necrotizing fasciitis of anterior abdominal wall. It is a known but rare complication of laparoscopic surgeries. Few cases have reported in association with laparoscopic appendicectomy. We describe a case of Meleney's gangrene developed following laparoscopic appendicectomy of a 46-year old female. The challenges in management overcame successfully with a tailor-made surgical approach in low resource setting.

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**Introduction**

Necrotizing fasciitis (NF) is a type of aggressive skin and soft tissue infection that results in necrosis of the muscle fascia and subcutaneous tissues. The overlying tissues are initially unaffected, but the infectious process rapidly spreads and eventually causes infection of the fascia and perifascial planes as well as a secondary infection of the overlying and underlying skin, soft tissue, and muscle [1,2].

The name NF was proposed by Wilson in 1952, but such infection was first described by Hippocrates in the early 5<sup>th</sup> century BC. NF of the perineal and genital region is named Fournier's gangrene and the NF of the anterior abdominal wall (AAW) is called Meleney's gangrene (MG) after Fournier and Meleney described them respectively [3].

Here we report a case of successfully managed MG associated with laparoscopic appendicectomy (LA).

**Case Report**

A 46-year lady presented to the surgical casualty complaining of abdominal pain for 7 days followed by inflamed AAW with fever and features suggestive of sepsis with a history of LA for uncomplicated appendicitis 15 days prior to the presentation. The clinical examination revealed grossly inflamed AAW with a pus-discharging sinus and severe tenderness. The systemic blood pressure, respiratory rate and mental status were suggestive of sepsis with a quick Sequential Organ Failure Assessment Score (qSOFA) of two out of three.

Initial investigations revealed a white cell count as high as 30000/uL and CRP was 240 mg/dL. The ultrasound scan of the abdomen and AAW showed extensive soft tissue swelling with floating echogenic particles suggestive of an abscess in the AAW extending up to the deep layers without evidence of intrabdominal extension. (Figure 1)

Initial resuscitation and management were done according to the Surviving Sepsis Campaign Guideline

2021 one-hour care bundle and extensive wound debridement were done under general anaesthesia [4].

Intraoperative findings were extensive soft tissue necrosis including the subcutaneous fat, rectus sheath and all the anterior abdominal wall muscles including the rectus abdominus muscle in a circular area with a diameter of about 20 centimetres. (Figure 2)

All the necrotic tissues were excised and removed exposing the peritoneum. A thorough washout was done, and the wound was packed with povidone-iodine dressings. The patient was transferred to the intensive care unit for paralyzed ventilation and supportive care to prevent bulging of the peritoneum and evisceration of abdominal content.

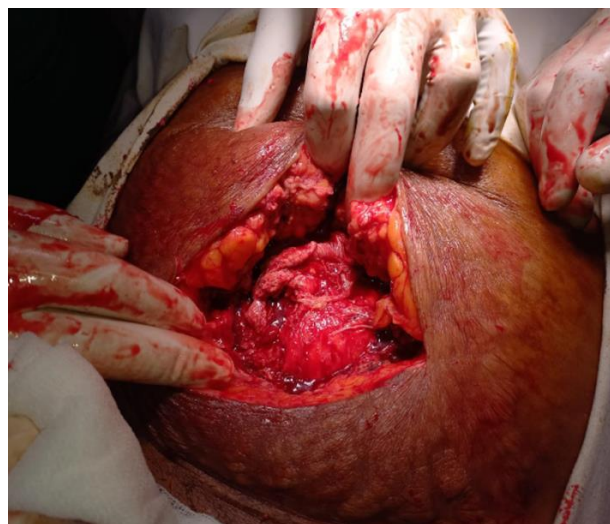


**Figure 1:** Inflamed anterior abdominal wall at the presentation

Closure of the AAW defect was challenging. Using a synthetic mesh was not a suitable option due to the ongoing infection. This challenge was overcome by the temporary closure of the defect with a sterile urine collection bag that was cut open on one side, the one-way valve removed, and sutured to the edges of the rectus sheath which would act as a passive drain that drains the contents collected below and possible irrigation via the same tube (Figure 3, A and B).

The patient was extubated on post-operative day 3 and repeated wound inspection and washouts were done on every other day until post-operative day 21. Good granulation tissue formation was noted below the temporary closure bag. On post-operative day 23 after confirming that there is no ongoing infection, the defect was permanently closed with a 15 cm by 15 cm polypropylene mesh. Skin closure was possible as adequate amount of skin and fat was spared. (Figure 4)

The patient was discharged on post-operative day 29 and reviewed at the clinic level on post-discharge day 14 and day 28. On follow up the patient was completely recovered, and the wounds were well healed.



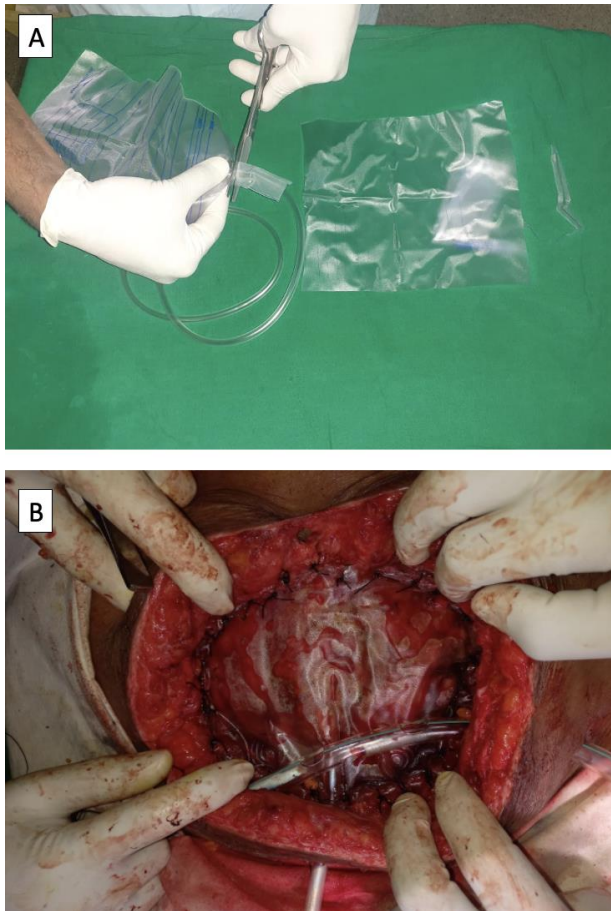
**Figure 2:** Intra-operative picture showing necrotic tissue

## Discussion

Laparoscopic appendicectomy (LA) is a commonly practised procedure in the management of acute appendicitis. It is associated with fewer post-operative complications, and post-operative hospital stays and results in good cosmetic outcomes related to open procedures [5]. MG is a rare but mortal condition which could be a complication of abdominal surgeries. MG associated with the laparoscopic procedure are even rare and only a few cases have been reported in association with LA [1,6–9]. The authors didn't find any in Sri Lankan literature.

The source of infection in our patients is uncertain. Possible routes of the infection are: (i) direct spread to the AAW from the inflamed appendix itself; (ii) from removing the appendix through the laparoscopic port incision site; or (iii) from exogenous pathogens invading the wound postoperatively. Non-traumatic haematogenous spread of toxin-producing bacteria from a distant site of infection has also been described [6].

The routes of infection i and iii are the most possible sources of infection in our case. Use of retrieval bags and post-operative antibiotics and proper wound care would minimize the post-operative infections. Preexisting diabetes in our patient may have contributed to the infection process even though other risk factors were not identified.

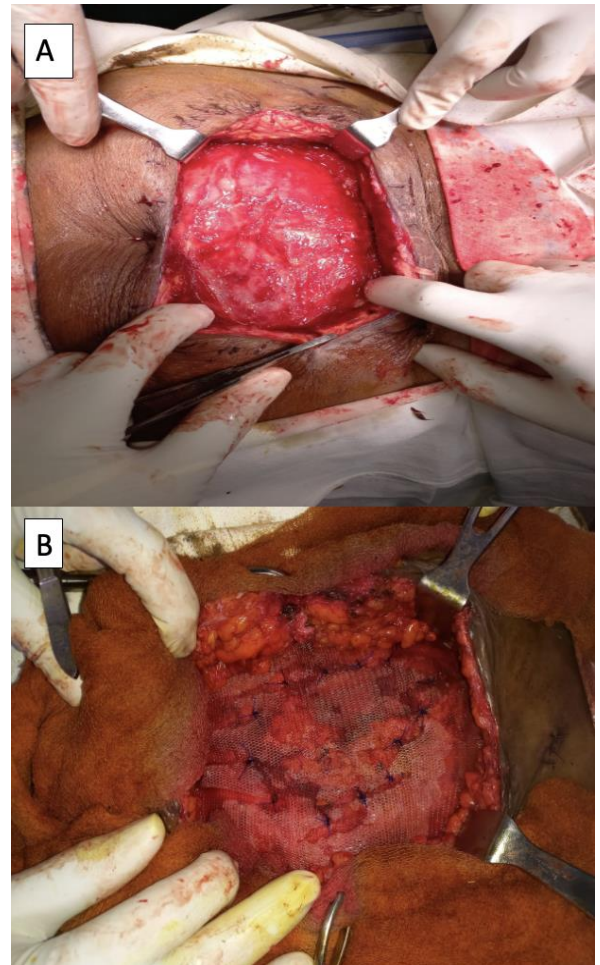


**Figure 3:** A, Preparation of the sterile urine collection bag for the temporary closure of the defect; B, Temporarily closed wall defect with sterile urine collection bag with drain

Management of MG is challenging because of several factors. Ongoing sepsis superimposed on surgical stress and challenges related to wound management and reconstruction of the anterior abdominal wall complicates the management process. Adhering to the surviving sepsis campaign, sepsis care bundle and source control by early surgical interventions led to better outcomes [10].

In the management of the wound, hyperbaric oxygen therapy and vacuum dressing have shown better and quick results regarding granulation, better results with repeated wound debridement per se were reported in low-resource settings [11].

Successful use of biological mesh in contaminated fields for abdominal wall reconstruction has been reported in the literature [12].



**Figure 4:** A-Well granulated area below the covering bag, B- Permanent closure of the defect with polypropylene mesh

However, the unavailability and cost were the limiting factors. Therefore, we overcome the challenge related to temporary defect closure until the infection is settled, by using the tailor-made approach as described above. The use of laparostomy with Bogota bag in temporary abdomen closure was the principle used here even though the peritoneum is not breached ([13].


**Conclusion**

MG is a rare but possible complication of LA. Early identification and timely intervention would give a better outcome. Tailor-made approaches could be useful in low-resource settings in the management of MG.



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