

Pancreatic aspirate directed antimicrobial therapy in patients with walled off necrosis (WON) following endoscopic drainage: A proof-of-concept study

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Aims

1. Using pancreatic necrosus culture to identify the microbiome.
2. Optimising antimicrobial therapy in necrotising pancreatitis.
3. Gaining further understanding of the aetiology of infected necrotising pancreatitis.

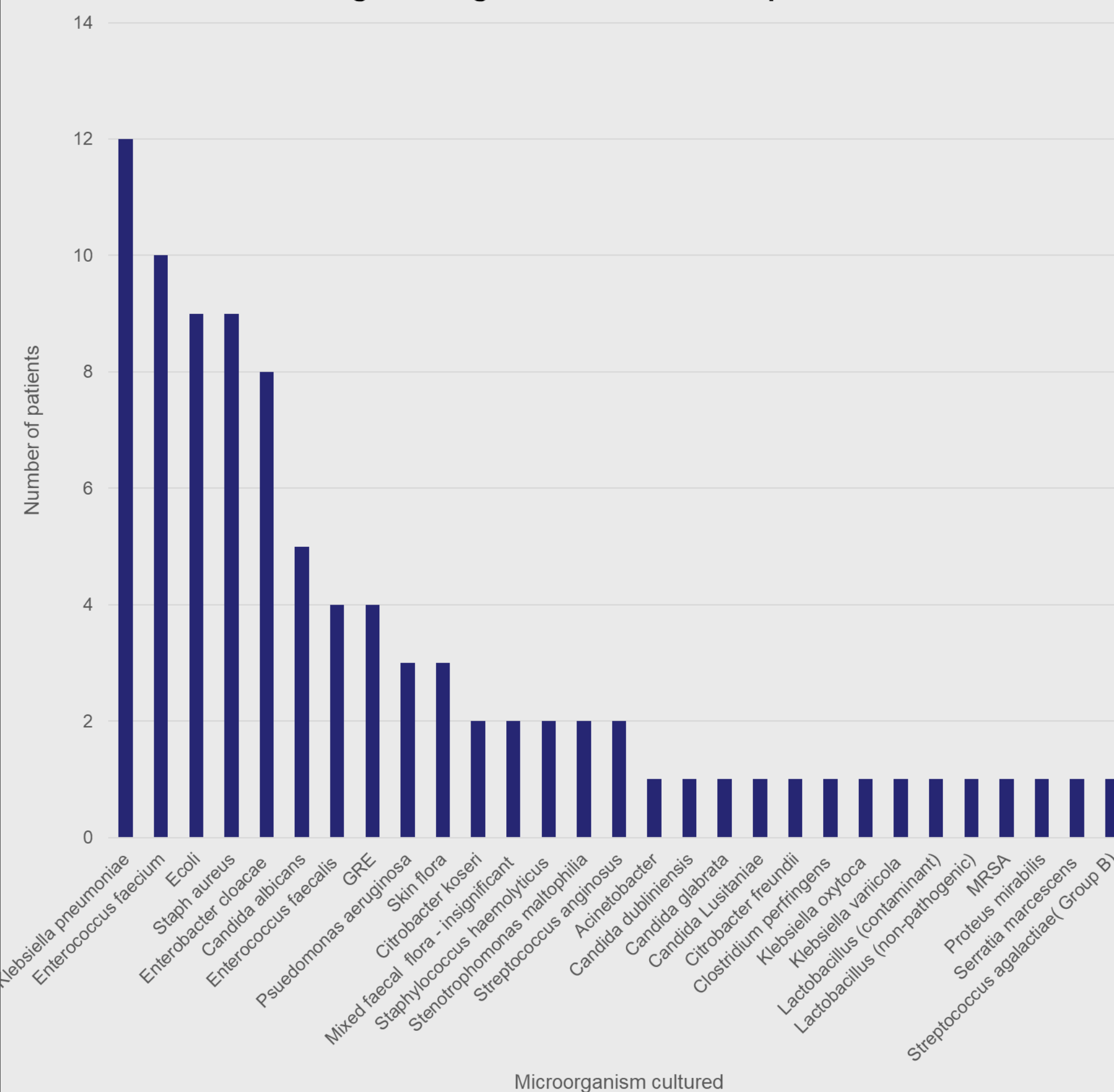
METHODS AND MATERIALS

53 consecutive patients with WON who underwent EUS guided drainage using lumen apposing metal stents (LAMS) from December 2022 to February 2024 were included in the study.

The pancreatic aspirate (PA) collected during the first walled off necrosis (WON) drainage was sent for microbiology analysis.

Demographic and clinical data was collected including comorbidities, mortality, culture and sensitivity, and blood culture results.

Microorganisms grown and number of patients



Graph 1: Microbiology of WON

CLINICAL RESULTS

The mean age was 53.2 years (range = 14-76). M:F = 28:26.

The commonest aetiologies for AP were alcohol (22%) & gallstones (57%) (Chart 1).

Organ support was needed in 35% of patients, and the average ITU length of stay (LOS) was 12 days (range – 1-150).

48% needed direct endoscopic necrosectomy following the index drainage procedure.

Average inpatient LOS was 54 days (range = 2-450).

27% had new-onset diabetes mellitus.

Mortality was 9.2% (Chart 2).

Aetiology of pancreatitis

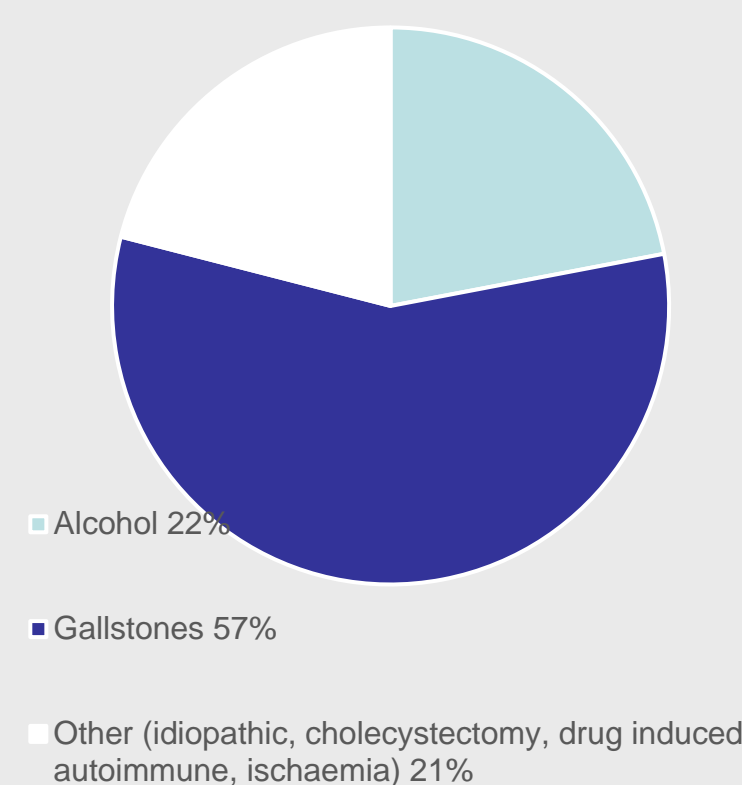


Chart 1. Aetiology of pancreatitis

Mortality

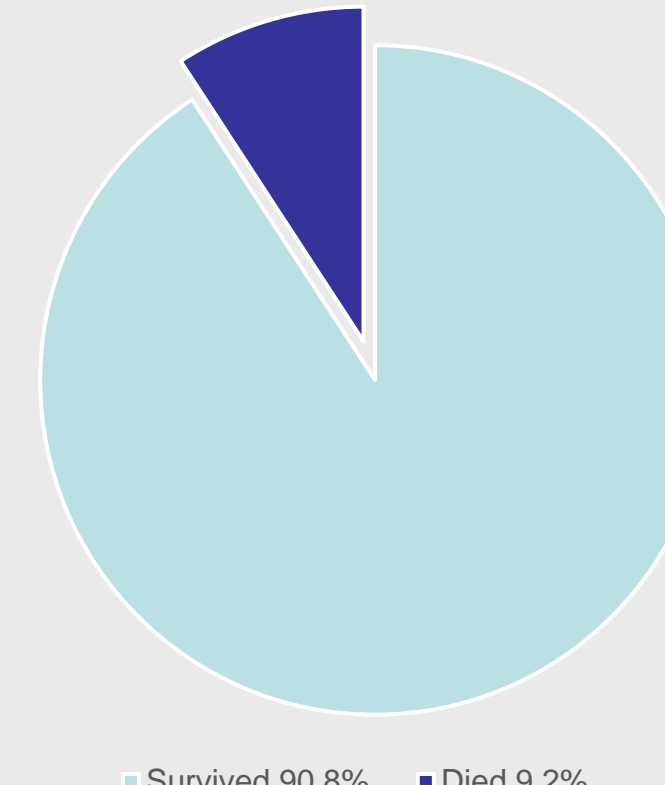


Chart 2: Overall mortality

Pancreatic aspiration culture results

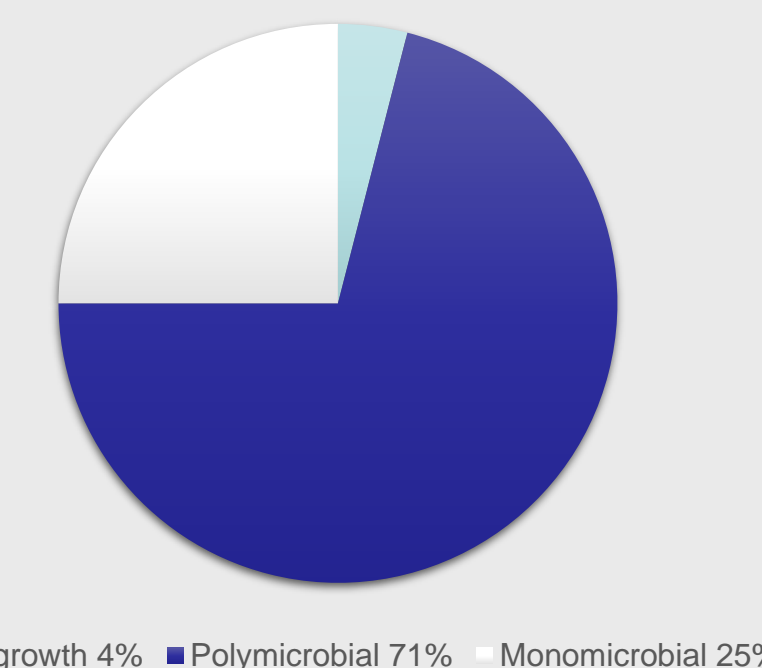


Chart 3. Pancreatic culture results

Patients with a positive blood culture

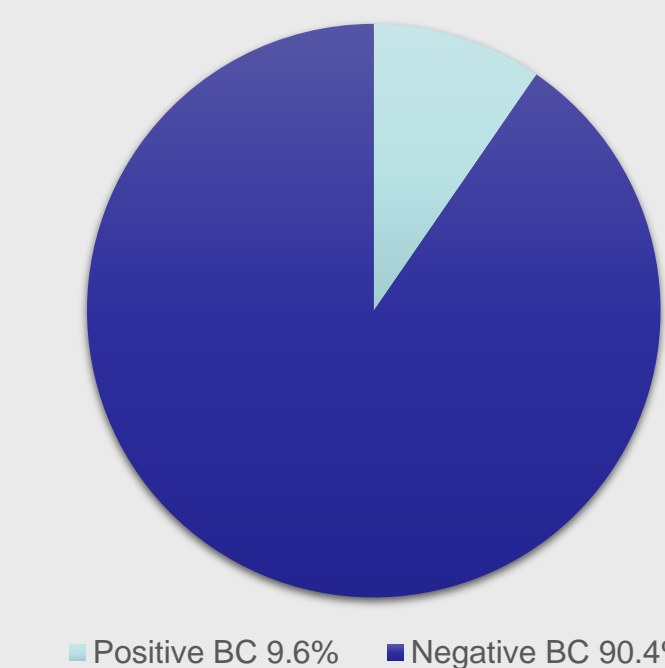


Chart 4. Blood culture results

MICROBIOLOGY RESULTS

96% of patients had positive cultures (Chart 3)

71% of patients had polymicrobial cultures ranging from 2-4 species (Chart 3).

Commonest microorganisms grown were *Klebsiella pneumoniae*, *Enterococcus faecium*, *Escherichia coli*, and *Staphylococcus aureus*. 8 patients grew *Candida* species (Graph 1).

Five *Klebsiella pneumoniae* isolates were multidrug resistant organisms only sensitive to 3rd line antibiotics, including colistin.

3 patients had isolates which changed from sensitive to resistant between the 1st and subsequent aspirates.

3 patients had multiple multidrug resistant organisms (MDROs).

Only 9.6% had positive blood cultures, and in 100% of these patients the microorganism causing bacteraemia correlated with the microorganism in the infected necrosus (Chart 4).

In patients requiring antibiotics, targeted antibiotic therapy was prescribed based on culture and sensitivity results.

CONCLUSIONS

This is the first study in literature to explore the pancreatic necrosis microbiome following LAMS insertion for WON.

Only a small number had positive blood cultures (9.6%) which is currently the standard of care.

The majority of infected WON's were polymicrobial and correlate with systemic positive blood cultures.

Further larger studies are warranted to understand the role of pancreatic aspirate to aid antimicrobial therapy in acute pancreatitis.

Take home message:

Microbiological culture and sensitivity of the pancreatic necrosus aids in targeting appropriate antibiotic therapy in patients with WON.

References

- Fig 1: Tambe, Y. (2024) *Candida Albicans*, *Candida (fungus)*. Available at: [https://en.wikipedia.org/wiki/Candida_\(fungus\)](https://en.wikipedia.org/wiki/Candida_(fungus)) (Accessed: 06 November 2024).
- Fig 2: Genome, Y. (2024) *Staphylococcus aureus*, *What are Staphylococcal infections?* Available at: <https://www.yourgenome.org/theme/what-are-staphylococcal-infections/> (Accessed: 06 November 2024).
- Fig 3 : Callaway, E. (2012) 'E. coli strain linked to cancer in mice', *Nature* [Preprint]. doi:10.1038/nature.2012.11211.

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