

From Damage Control to Recovery: Pediatric Open Abdomen – a review

Zaky Firmawan El Hakim¹, Nabila Ananda Kloping¹, Barmadisatrio²

¹Resident of Pediatric Surgery Division, Surgery Department, Dr. Soetomo General Academic Hospital, Faculty of Medicine Universitas Airlangga, Surabaya, Indonesia

²Pediatric Surgery Division, Surgery Department, Dr. Soetomo General Academic Hospital, Faculty of Medicine Universitas Airlangga, Surabaya, Indonesia

BACKGROUND

Open abdomen is a procedure often being used in patients that have a **high risk of abdominal compartment syndrome (ACS)**, need a **second look** from first surgery or when it is **not possible to do closure after surgery**.

METHODS

We performed a **review of relevant case reports** published between January 2015 and June 2025 in three databases (**ScienceDirect, Springer, PubMed**). Extracted data focused on **clinical indications** that led to open abdomen, the **duration of the open abdomen**, the **treatment strategies**, **patient outcomes**, and **length of hospital stay**.

RESULT

- **9 case report** with a total of 225 pediatric patients with open abdomen.
- **The most common underlying condition was ACS.**
- The duration of open abdomen varies between **24 hours - 63 days.**
- There were also cases where the abdomen was **left open.**
- **Mortality rates vary widely** with the most concurrent cause of the death was **ACS.**

KEYWORD

("open abdomen") AND ("paediatric" OR "pediatric") AND ("open abdomen") AND ("duration") AND ("time to closure") AND ("outcome") AND ("hospital stay")

PRISMA FLOWCHART

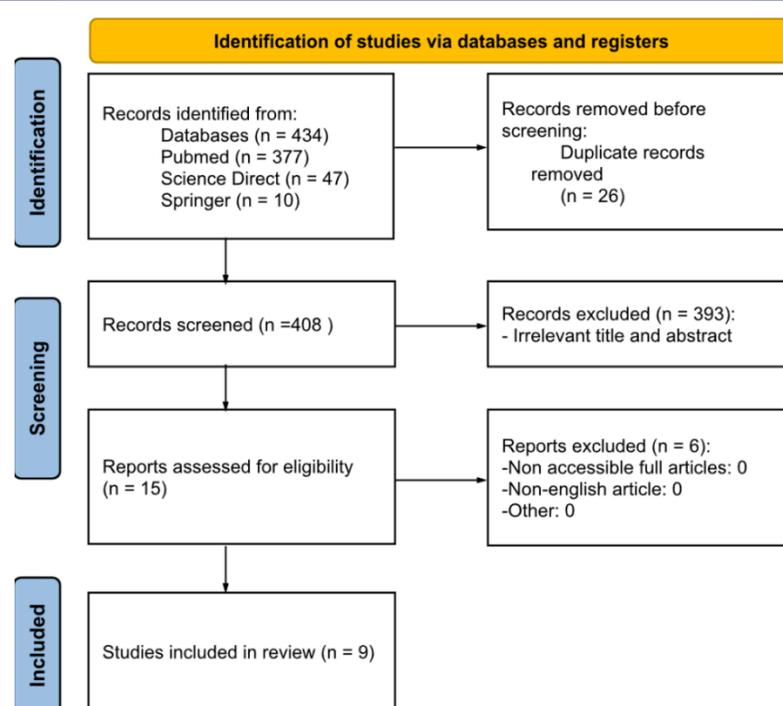


Fig 1. **Bogota Bag** for Abdominal Closure

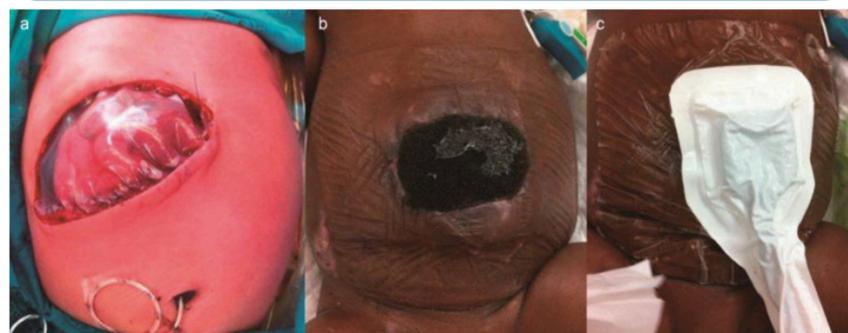


Fig 2. **Vacuum** for Abdominal Closure

Technique Used for Closure	Duration of Open Abdomen (Days)	Length of Stay (Days)	Survival Rate	Common Indication	Complication	Advantages	Limitation
Vacuum	1 - 63	27 - 179	80 - 93%	Necrotizing Enterocolitis, ACS, gastroschisis, Congenital Diaphragma Hernia, trauma	Enterocutaneous fistula (rare), stoma-related issues	Controlled drainage, reduced ACS, potential ostomy avoidance	Requires equipment, cost, potential for fistula
Bogota Bag	2 - 19 (some cases left open the abdomen)	30 - 89	80 - 100%	Peritonitis, volvulus, congenital malformations	Ventral hernia (delayed), limited fluid drainage	Simple, inexpensive, good for visual inspection	Less control of fluid loss, higher hernia risk

The **survival rate** is **not determined** by the method of **open abdominal care**, but by the **patient's underlying disease, treatment techniques in the form of vacuum and Bogota bags** determine the **wound healing process** of the open abdomen itself.

CONCLUSION

Among the various techniques available, **Vacuum-Assisted Closure (VAC)** has **emerged as the safest and most effective approach**. Continued research and refinement of open abdomen technique are essential to further improve the care and prognosis of pediatric patients with open abdomen.

REFERENCES

