

COMMENTARY

Management of amoebic peritonitis due to ruptured amoebic liver abscess: It's time for a paradigm shift

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Amoebiasis is a disease of global importance and is prevalent in tropical third-world countries due to poor sanitation and overcrowding. It is caused by *Entamoeba histolytica*, a parasite that is acquired by water or food contaminated by human feces. Amoebic liver abscess (ALA) is the most common extraintestinal manifestation of amoebiasis. In general, invasive amoebiasis, including ALA, develops in <10% of subjects with amoebiasis. Hosts with immunocompromised state, diabetes mellitus, and chronic alcoholism are more prone to develop ALA. Amoebiasis and ALA are endemic in India. The most common complication of ALA is rupture into adjacent organ or anatomical space. Rupture of ALA generally occurs into the pleura, lung, peritoneum, or the pericardium. Rupture is a potentially fatal complication in the natural history of an ALA. Amoebic peritonitis secondary to ALA rupture has been reported to occur in 2.4–13% of cases, with a fatality rate of 40–50%.^{1,2}

Amoebicidal drugs such as metronidazole are the first-line treatment of ALA. There is evidence to support that an uncomplicated, solitary, right lobe liver abscess of up to 10 cm size can be treated with metronidazole alone³; however, a ruptured ALA generally requires some form of drainage procedure. The traditional therapy for a ruptured ALA has been immediate surgical drainage combined with antimicrobial drug therapy.^{1,2,4}

However, the introduction of percutaneous aspiration and drainage around the mid-1970s and subsequent refinement of the technique has created a new therapeutic possibility for this group of patients. Ultrasound-guided percutaneous catheter drainage (PCD) is now being accepted as the standard of care for complicated ALA, including those with contained rupture and localized peritonitis. However, there is still no consensus on how a ruptured ALA associated with diffuse amoebic peritonitis can be optimally managed. In our clinical practice, despite ongoing dilemmas and lack of evidence, such patients are often subjected to open surgical treatment. It is worth noting here that these patients are usually sick, malnourished, hypoalbuminemic, and have systemic toxemia with or without organ dysfunction. Moreover, anesthetists often demonstrate reluctance for general anesthesia right away in such high-risk patients, and the resulting delay in surgical intervention may further increase the possibility of surgical mortality. Surgery in such high-risk patients may cause worsening inflammatory response, tissue hypoxia, micro-circulatory failure, organ failure, and death. The reported mortality rates following surgical therapy in patients with ALA that ruptured freely into the peritoneum have ranged from 20 to 50%, while it is 0–5% following conservative medical therapy consisting of ultrasound-guided PCD combined with antimicrobial agents (Table 1).

Table 1 Mortality rates of surgical versus nonsurgical therapy in patients with amoebic liver abscess (ALA) with rupture into the peritoneum

Study	Years	Total (N)	Diffuse peritoneal rupture (N)	Treatment in diffuse peritoneal rupture (N)	Mortality	
					Medical	Surgical
Eggleston <i>et al.</i> ¹	1982	19	19 [†]	Surgery: 19	—	42%
Greany <i>et al.</i> ²	1985	15	08	AT: 03 Surgery: 05	00	20%
Ken <i>et al.</i> ⁵	1989	05	05 [†]	PCD + AT: 05	00	—
Sharda <i>et al.</i> ⁶	1989	23	16	PCD + AT: 08 Surgery: 08	00	50%
Meng <i>et al.</i> ⁴	1994	110	11	PCD + AT: 01 Surgery: 10	00	50%
Baijal <i>et al.</i> ⁷	1995	13	02	PCD + AT: 02	00	—
Menon <i>et al.</i> ⁸	2010	36	36	PCD + AT: 20 Surgery: 16	05%	37.5%
Bhatia <i>et al.</i> ⁹	2017	50	43	Surgery: 43	—	26%
Priyadarshi <i>et al.</i> ¹⁰	2018	117	32	PCD + AT: 32	3.1%	—

[†]The number with diffuse peritonitis not specified.

AT, Antimicrobial therapy (including amoebicidal therapy); PCD, percutaneous catheter drainage.

In 1982, Eggleston *et al.* reported a mortality rate of 42% following surgical therapy in 19 patients who had amoebic peritonitis secondary to rupture of ALA.¹ Subsequent studies on surgical treatment for ruptured ALA into the peritoneum by Greany *et al.*,² Sharda *et al.*,⁶ Meng *et al.*,⁴ Menon *et al.*,⁸ and Bhatia *et al.*⁹ demonstrated mortality rates of 20, 50, 50, 37.5, and 26%, respectively. Van Sonnenberg *et al.* were the first to demonstrate the efficacy of PCD therapy in patients with nonruptured ALA in 1982, whereas successful treatment with PCD in five severely ill ruptured ALA patients was reported for the first time by Ken *et al.*⁵ In a recent study by Priyadarshi *et al.*,¹⁰ where 32 of 117 (27.3%) patients with ruptured ALA had diffuse intraperitoneal spread, all patients were managed with PCD along with antimicrobial agents. The success rate among patients with diffuse peritoneal spread was 97%, with a mortality rate of 3% (01/32). All the abscess cavities and peritoneal collections were drained using multiple PCDs. Despite complex septations, the majority of patients with free intraperitoneal rupture could be treated successfully with PCD, although they required a higher number of catheters and longer hospital stay compared to patients with contained rupture. It is quite noticeable that, although the mortality rate of open surgical drainage has improved from 50%⁶ in 1989 to 26%⁹ in 2017, it remained considerably high compared to mortality rates following nonsurgical therapy (<5%) (Table 1). Therefore, it appears that surgery in such patients causes more harm than good. Ultrasound-guided PCD of peritoneal collection is a safe, accessible, minimally invasive method with a high technical success rate.¹⁰ Other advantages of PCD over open surgery include lower cost, minimal systemic adverse effect, requirement of only local anesthesia, and shortened hospital stay.

Amoebic peritonitis can develop due to rupture of ALA or perforation of amoebic colitis. Perforation of amoebic colitis is associated with high mortality because of associated toxemia, fecal contamination, and secondary bacterial infection. ALA mostly contains thick, brown, acellular debris resembling anchovy paste, which is almost always sterile, except in conditions where a secondary infection has occurred. In a study by Monga *et al.*, the mortality rate following surgical therapy was 33% in ALAs rupturing into the peritoneum and 75% in perforation of amoebic colitis.¹¹ Amoebic peritonitis due to ruptured ALA is more likely to be sterile and has lesser aggressive behavior compared to the ones due to perforation of amoebic colitis. Therefore, avoidance of surgical trauma in such patients and using a minimally invasive drainage approach like PCD has resulted in a significant decline in mortality rates.^{4,6,8}

Treatment paradigm shifts have occurred throughout history following better understanding of the disease and its response to various therapies. Evidence suggests that, even in the

case of a free perforation of ALA into the peritoneal cavity, conservative treatment with a PCD and an antimicrobial has excellent outcome in comparison to open surgery (Table 1). Despite improvements in surgical techniques, anesthesia, critical care, and wide availability of antimicrobial agents, the mortality rate of surgical treatment is still quite high. In the hands of experienced radiologists, the majority of peritoneal collections are amenable to percutaneous drainage. In severely ill patients, PCD offers an immediate and minimally invasive solution to a life-threatening condition, often resulting in clinical stability within a few days. Therefore, we would like to conclude that, despite the inherent limitations of studies, PCD should be the preferred option in such patients. We believe that the peritoneal rupture of ALA itself should not be an indication for open surgery. Surgery should be reserved for the rare instance of intractable secondary bacterial infection and in those who fail to respond to conservative methods due to inadequate drainage achievable by PCD.

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