

## Comment on “Evaluation of Patients with Gallbladder Perforation: Experience at a Tertiary Centre”

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We sincerely applaud the work done by Alvi et al., in which they report and evaluate retrospective data concerning patients with gallbladder perforation (GBP) and its management [1]. Currently, there is still a lack of cohort studies describing the proper approach and management of this pathology, with only a few studies comparing different options and outcomes for GBP [2,3].

Niemeier in 1934 described the gallbladder perforation pathology, classifying it into three types: 1) Chronic perforations with fistulous communications, 2) Subacute perforations with an abscess, and 3) Acute perforation into the peritoneal cavity [4]. In 1951 Fletcher & Ravdin mistakenly swapped types 1 and 3 [5]. Since then, many authors, including the present study, have mistaken the Niemeier classification, creating conflicting data, as management options vary widely between fistulous communication and biliary peritonitis.

Currently, eponyms are avoided in the medical field. Over-publication of these can lead to confusing data reporting, and misinterpretation of results, although many guidelines are published after the name of the sponsoring association, or city where these are reviewed [6]. In the case of a classification such as Niemeier's, with constant mistakes among authors, it should be left as a historical fact, and reported by their definition: fistulous communication (chronic GBP), localized abscess (subacute GBP), and biliary peritonitis (acute GBP). These are not misleading and provide useful clinical and surgical information about the state of the pathology in the patients [2,3].

Caution should be taken when interpreting the discussion of the proposed treatments by the authors in this case series. There are several statements the authors claim as the actual practice guideline, without considering updated evidence. For instance, the authors discussed mortality rates of up to 50%, using outdated references. Results mentioned the mortality rate was related to comorbidities,

but failed to specify which, or with which type. Biliary peritonitis is generally observed in patients with atherosclerotic heart disease, diabetes, malignant neoplasms, cirrhosis, and immunosuppressive treatment, without a history of chronic cholecystitis. Contrary to localized abscess GBP, which has been more frequently associated in patients with a prolonged history of gallstones [7-11].

A recent systematic review of localized gallbladder perforation evidenced no advantage in performing percutaneous drainage (PCD) of abscess but rather increased hospital stay, contrary to the authors' reported conservative treatment and PCD as a first approach before surgery [2]. This datum will need to be revised in future reviews, as more cohorts and case series are added to the available literature, considering quality and risk of bias of the studies.

The authors state the fundus is the most common site of GBP due to the absence of omentum coverage. However, this is erroneous. A localized abscess (subacute) GBP is many times possible thanks to the adhesions created by the omentum, limiting inflammation to the gallbladder. The most accepted theory for fundus perforation is due to its limited vascular supply therefore first site to suffer vascular occlusion [8].

Studies such as this provide an important contribution to the available data for GBP management, as guidelines continue to be vague in their precise treatment recommendations [6]. Hopefully, future guidelines will provide an evidence-based algorithm on how to best approach this pathology. For now, readers should consider the available recommendations and use clinical reasoning skills to individualize treatment for their patients [2,3,12].

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