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Invited Commentary to: „Gastric Outlet Obstruction Caused by Gallstone: Bouveret's Syndrome“

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Bouveret's syndrome, the obstruction of the duodenal passage by a large gallstone, is a rare manifestation of biliary lithiasis. Patients with gallstone ileus represent approximately 2% of all patients with mechanical bowel obstruction. Approximately 3% (1 to 10%) of all patients with gallstone ileus have Bouveret's syndrome (2, 3, 6), and the authors nicely present and document one of these rare cases. Bouveret's syndrome in its classic but rarely encountered form (25%) radiologically presents with *Rigler's* trias, consisting of pneumobilia, a large extrabiliary gallstone, and obstruction of the intestinal passage in a plain abdominal X-ray (10). Another useful radiologic sign under these circumstances is air in the gallbladder, usually referred to as *Balthazar's* sign (1). The standard treatment of classic gallstone ileus is surgical, and consists of enterolithotomy. The authors emphasize that in Bouveret's syndrome non-surgical treatments, such as extracorporeal shock wave lithotripsy (ESWL), are available as an alternative, or in their case as an adjunct to surgery (5). The rationale behind this strategy is to fragment the usually large stone to allow restoration of the intestinal passage. This option is only available if the obstructing gallstone is located proximally in the gastrointestinal tract so that the distal stomach and duodenum can be targeted by ultrasound and ESWL, whereas stones in the ileum are usually surrounded by dilated intestinal loops and, therefore, are not amenable to this treatment (5). Another possibility for gallstone fragmentation in Bouveret's syndrome, less readily available in most hospitals, is endoscopic contact lithotripsy (4).

We would now like to discuss some of the clinical, pathogenic and therapeutic aspects of Bouveret's syndrome that are not as extensively described in the present case, and which can improve the understanding of this rare manifestation of disease.

The „*conditio sine qua non*“ for gallstone ileus and Bouveret's syndrome is the presence of a bilioenteric fistula. The most commonly encountered fistula is a cholecystoduodenal one as described by *Ondrejka* et al. in their case. In the majority of cases the underlying condition is chronic cholecystitis with intermittent acute inflammatory episodes and adherence of the gallbladder to the duodenum or the stomach in patients with Bouveret's syndrome or gallstone ileus. Large stones within the gallbladder can then erode into an adherent neighboring viscus. A penetrating duodenal ulcer is a pathogenetic alternative. In cases with gallstone ileus either cholecystoenteric or cholecystocolic fistulae are rarely encountered. It is, therefore, not surprising that more than 50% of these patients have a long history of intermittent biliary symptoms with mostly repetitive right upper quadrant

pain (2) before they develop Bouveret's syndrome or gallstone ileus. In patients with cholesterol gallstones, as predominantly seen in the Western world, a history of jaundice is rare. It can be observed in patients with choledochoduodenal fistula, or with Bouveret's syndrome accompanied by choledocholithiasis.

The treatment of patients with Bouveret's syndrome by ESWL can be an elegant option to avoid surgery in patients that are usually old and sometimes have high surgical risks. The goal of such a treatment, however, should be to avoid surgery. Although *Ondrejka* et al. state that ESWL was successful in the sense that it caused the large gallstone to pass the duodenum, this treatment really converted this case of Bouveret's syndrome into a classic case of a gallstone ileus. Although the published series are too small to give firm recommendations on surgical treatment options in Bouveret's syndrome, the outcome in this and similar cases does not so much depend on the type of operation (primary laparotomy with gastroduodenotomy versus enterolithotomy after ESWL) but on the condition of the patients and their preexisting surgical risk factors. The delay in treatment and the length of time of the evolving intestinal obstruction certainly have to be taken into account when assessing the risk of the patient (9).

Finally, even a successful fragmentation of an obstructing gallstone with spontaneous passage of the stone fragments leaves the question unanswered whether a definitive surgical treatment consisting of cholecystectomy and closure of the bilioenteric fistula is necessary, and at what stage of the disease this should be carried out. The morbidity and mortality of a one-stage procedure, i.e. definitive surgical treatment at the time of intestinal obstruction, seems to be higher compared to a two-stage procedure (7). A more recent report, however, suggests that a one-stage procedure is probably indicated if local and general conditions permit a safe operation (2). We would certainly support this treatment concept, which is to evaluate patients carefully with respect to surgical risk factors, and operate on patients with Bouveret's syndrome and gallstone ileus in a one-stage procedure, if the surgical risk is acceptable. The option of stone fragmentation, by ESWL or by endoscopic lithotripsy certainly gives us a welcome treatment alternative and is particularly attractive for patients with a high surgical risk and Bouveret's syndrome, particularly if no residual gallbladder stones can be demonstrated.

References

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