

SHORT REPORTS

Percutaneous electrohydraulic lithotripsy of retained bile duct calculus

Retained stones are found in 4-9% of patients after exploration of the bile duct¹ and may generally be removed by endoscopic sphincterotomy and instrumentation of the duct.² Large calculi, however, may prove impossible to extract endoscopically, and their removal, in addition to being more hazardous, may carry the risk of gallstone ileus.³ We report our experience of electrohydraulic lithotriptic disintegration of a large retained bile duct stone. The technique requires general anaesthesia and use of x ray screening facilities, a side viewing duodenoscope, a flexible choledochoscope, and several ancillary instruments.

Case report

A 64 year old woman was admitted with a six week history of obstructive jaundice. Ultrasound showed gall stones and confirmed moderate intrahepatic and appreciable extrahepatic duct dilatation. The site of obstruction was not seen, but the pancreas appeared normal. The next day she underwent endoscopic retrograde cholangiopancreatography, which showed a dilated bile duct containing several calculi. Endoscopic sphincterotomy was attempted but failed owing to a juxtapancreatic diverticulum.



Photograph taken through duodenoscope showing fragmented stone lying in bowel lumen.

Three days later she underwent cholecystectomy, exploration of the bile duct, and transduodenal sphincterotomy. Several stones were removed, resulting in free passage of stone grasping forceps along the ducts. A 14 French gauge latex T tube was inserted. She made a good postoperative recovery, but routine T tube cholangiography at 10 days disclosed a large stone in the bile duct immediately beneath the vertical limb of the T tube.

One month after surgery repeat endoscopic retrograde cholangiopancreatography showed the previous sphincterotomy to be widely patent. The stone was seen, but despite extension of the sphincterotomy and use of a balloon catheter it could not be removed as its diameter was greater than that of the lower 3 cm of bile duct.

Eight weeks after surgery endoscopic retrograde cholangiopancreatography was again attempted, but despite use of a crushing Dormia basket the stone could not be moved. Under x ray screening a guide wire was passed into the bile duct via the lumen of the T tube, which was then removed. Pliable dilators were passed over the wire to dilate the tract. Next a 12 French gauge flexible choledochoscope was fed into the duct by passing the guide wire along the instrument channel. The guide wire was then removed. A 5 French gauge probe connected to a Wolf electrohydraulic shock wave generator was then passed down the instrument channel to lie in direct contact with the stone. Under direct vision the stone was cracked into small fragments using both single and multiple (six per second) pulses (figure). The remnants of the stone were extracted from below using a Dormia basket. Contrast introduced into the duct confirmed that all fragments had been removed. She made an uneventful recovery.

Comment

Retained stones are a common complication after exploration of the bile duct with or without choledochoscopy.¹ Endoscopic retrograde cholangiopancreatography and endoscopic sphincterotomy are successful in clearing the bile duct in 85-92% of cases,² failure often occurring when the stones are large.

Infusion of glyceryl mono-octanoate or crushing instruments are methods of dealing with large or retained stones, but in our case the crushing basket was unsuccessful. Percutaneous lithotripsy has proved extremely useful for renal calculi⁴ and, we believe, will prove of further use for biliary calculi. The technique depends on the principle that spark discharges in a liquid cause hydraulic pressure waves that are so strong that they can fragment calculi. The procedure carries the risks inherent in cannulation of the bile duct—namely, septicaemia and cholangitis, which necessitate antibiotic prophylaxis, and damage to the duct causing bleeding or perforation in the short term and biliary strictures in the long term; it is essential that endoscopy is used in conjunction with the lithotripter as the tip of the probe must be seen to lie in direct contact with the calculus, otherwise the pressure wave may damage the duct.

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- 2 Leese T, Neoptolemos JP, Carr-Locke DL. Successes, failures, early complications and their management following endoscopic sphincterotomy: results in 394 consecutive patients from a single centre. *Br J Surg* 1985;72:215-9.
- 3 Cotton PB, Vallon AG. British experience with duodenoscopic sphincterotomy for removal of bile duct stones. *Br J Surg* 1981;68:373-5.
- 4 Wickham JEA, Kellett MJ. Percutaneous nephrolithotomy. *Br Med J* 1981;283:1571-2.

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Incidence and duration of neck pain among patients injured in car accidents

In a recent multicentre study of the medical effects of legislation on the use of seat belts the incidence of neck sprains was 18.5%.¹ We undertook a subsidiary study of patients from one of the hospitals that participated in the study to determine whether this figure was an underestimate.

Patients, methods, and results

Car occupants who had attended this hospital after road traffic accidents during six months in 1982 and in 1983 were contacted by questionnaire between one and two years after their accident. The questionnaire asked the direction of impact; whether the car had been moving; and whether the respondent had suffered neck pain before the accident and, if neck pain had occurred after the accident, when it had begun and ended. The information obtained was added to data already collected in the multicentre study. After 39% of the patients had been contacted we realised that the questionnaire was probably too suggestive of neck pain, and subsequent patients were interviewed, the interviewers carefully avoiding any such suggestion.

The local incidence of neck pain was determined from a local subsample of the Monica project on cardiovascular diseases.

Between 1 February and 31 July 1982 and 1983, 108 and 67 car occupants, respectively, attended the hospital after road accidents. Thirty eight could not be traced, leaving 137 patients in the study (74 men and 63 women). The youngest patient was 12 years old. No patients had sustained fractures or dislocations of the neck.

Eighty five patients (62%) complained of neck pain at some time after their accident. Of these, 66 thought that it had begun within 12 hours of the accident and 19 that it had begun after 12 hours. The pain had stopped during the first week in 15 patients and within six months in 48. In 36 of those who had had neck pain the pain had lasted for more than one year (31 had suffered pain occasionally and five continuously). Ten patients had experienced neck pain before their accident. The table shows the association of neck pain with various factors. The incidence of neck pain among the controls from the Monica project was 7.2%.