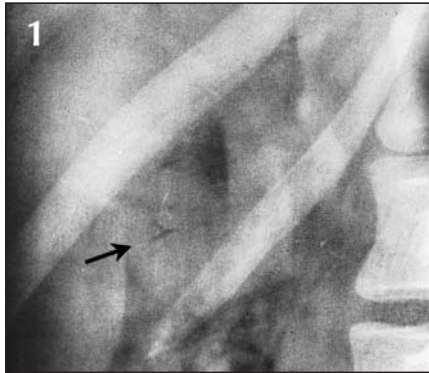
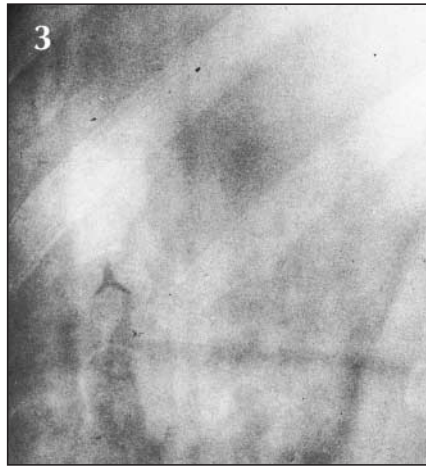


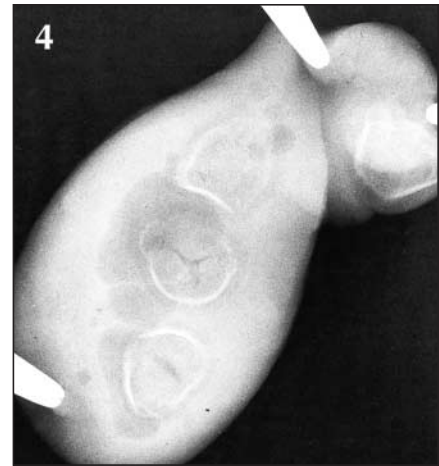
The Mercedes-Benz sign



A previously well 30-year-old man presented with a 2-hour history of colicky abdominal pain that gradually became steady and was localized to his right upper quadrant. He was otherwise asymptomatic, and his history was unremarkable except for a family history of gallbladder attacks. On physical examination the right upper quadrant of the abdomen was tender. A radiograph of the abdomen showed a radiolucent cross in the area of the gallbladder (Fig. 1, arrow). This Mercedes-Benz sign gave further credibility to the diagnosis of gallstones, a fact confirmed by surgical exploration through a paramedian incision. Cholecystectomy was performed, and the patient made an uneventful recovery. A radiograph of several extracted calculi the day of the surgery shows a radiolucent line in one (Fig. 2A). Another radiograph 24 hours later showed more pronounced radiolucent lines in several of the dried calculi (Fig. 2B). Sectioning of the stones under water produced bubbles, which suggested that the radiolucent areas were filled with gas.



In a second case, a patient presented with abdominal pain, and preoperative radiographs of the abdomen showed a similar triradiate shadow (Fig. 3). The patient's gallbladder was clamped intraoperatively, surgically excised and radiographed. The radiograph showed a gas-filled calculus before exposure to room air (Fig. 4).



The Mercedes-Benz radiological sign is a triradiate radiolucent shadow seen in the right upper quadrant of the abdomen. The appearance is characteristic of the automobile maker's trademark. The sign is rare, with only a few dozen cases reported in the literature,¹ and can be mistaken for gas and feces in a superimposed loop of bowel. The radiolucent lines represent gas accumulation within the body of a calculus. If the x-ray beam aligns with the longitudinal axis of the calculus, the typical triradiate

pattern can be seen. If the calculus is radiographed at right angles to its longitudinal axis, only the fissure tangential to the x-ray beam is shown.

Several authors have speculated on the origin of the sign. The centre of the calculus may contract more than its periphery, which would result in the radial fissures.² The gas in the fissures typically comprises less than 1% oxygen, 6%–8% carbon dioxide and the rest nitrogen.³ The high carbon dioxide and low oxygen concentrations relative to those in normal air may be due to the diffusion of gas into the calculus that may originate from a gas-forming organism.⁴

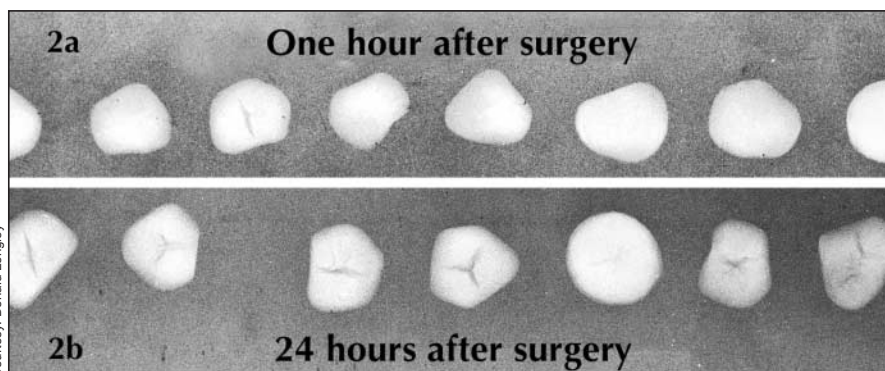
Although the mechanism of gas formation is of academic interest, the practical importance of the Mercedes-Benz sign is that it may indicate gallstones as a possible cause of a patient's abdominal pain.

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Courtesy: Donald Longley