

# Cholecystectomy in children

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## ABSTRACT

**INTRODUCTION:** It is recommended that children with typical clinical signs of biliary colic should be offered surgery if gallstones are present. The aim of this study was to describe a population of children having undergone cholecystectomy.

**MATERIAL AND METHODS:** A retrospective study of all children (aged less than 15 years) who had a cholecystectomy at the Department of Surgery, Odense University Hospital during a ten-year period (2000-2009).

**RESULTS:** Thirteen patients (ten girls and three boys) were operated. The median age was nine years and eight months (range: three years and two months to 14 years 11 and months). The indications for cholecystectomy were: recurrent abdominal pain and known gall bladder stones ( $n = 11$ ), recurrent abdominal pain and thickening of the gall bladder wall as verified by ultrasonography ( $n = 2$ ). Ten children had no known predisposing factor for development of gallstones. Among the remaining three, one had hereditary spherocytosis, one was obese and one had a bowel resection performed as a newborn because of necrotising enterocolitis. Laparoscopic cholecystectomy was performed in nine patients; open cholecystectomy in three and in one, the operation was initiated laparoscopically but converted into an open procedure. There were no postoperative complications. The median postoperative stay was one day (range: 1-7 days). Only one patient underwent subsequent diagnostic work-up for recurrent abdominal pain.

**CONCLUSION:** Cholecystectomy is rarely performed in children and when so, it is mostly performed in otherwise healthy children. The surgical techniques deployed and the duration of the postoperative stay are very similar to those observed for adults.

In adults, cholecystectomy is the most frequently performed abdominal surgical procedure next to inguinal herniotomy. Nearly 7,000 cholecystectomies are performed annually in Denmark (population 5,500,000 inhabitants). However, only very few of these are performed in patients who are younger than 20 years of age [1]. The Danish national recommendation is that patients with typical clinical signs of biliary colic should be offered cholecystectomy if gallstones are present [2], and this recommendation includes children. The aim of this study was to describe cholecystectomy in a population of children.

## MATERIAL AND METHODS

The Department of Surgery, Odense University Hospital performs surgery on children of all ages. The department both serves as the local surgical department for children of all ages (catchment area: approximately 250,000 inhabitants) and as a specialised department for children with congenital defects and other special diseases of the gastrointestinal tract (catchment area: approximately 3,000,000 inhabitants).

We retrospectively analysed the medical records of children (aged less than 15 years) registered at the Department from 1 January 2000 to 31 December 2009 with the therapy codes KJKA20 (cholecystectomy) or KJKA21 (laparoscopic cholecystectomy). The records were used to extract data on age, gender, other diseases, indication for cholecystectomy, surgical procedure, complications, postoperative stay and need for postoperative diagnostic work-up.

## RESULTS

Thirteen patients (ten girls and three boys) had a cholecystectomy during the study period. The median age was nine years and eight months (range: from three years and two months to 14 years and 11 months) (**Figure 1**). Eleven children (85%) had cholecystectomy on the indication "recurrent abdominal pain and known gall bladder stones" and two children (15%) had cholecystectomy because of recurrent abdominal pain and thickening of the gall bladder wall seen on ultrasonography. In ten of the children (77%), there was no known predisposing factor for the development of gallstones. Among the remaining three children (23%), one had hereditary spherocytosis, one was obese and one had had extensive bowel resection as a newborn due to necrotising enterocolitis.

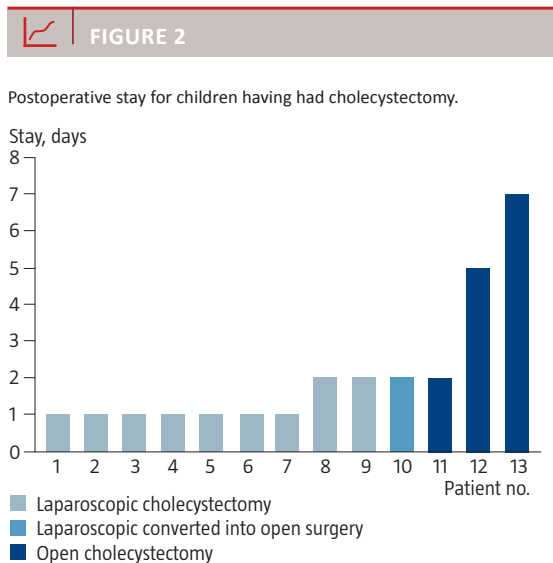
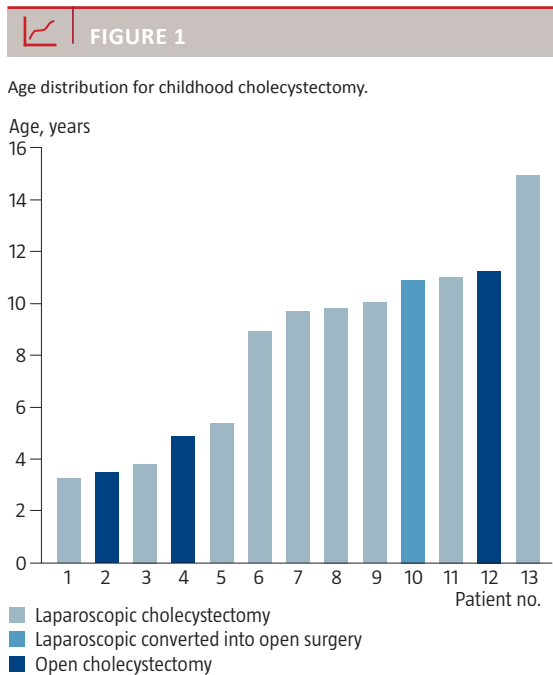
Laparoscopic cholecystectomy was performed in nine patients (69%) and open cholecystectomy in four patients (31%). However, in one of the latter cases, the operation was initiated as a laparoscopic procedure which then had to be converted into an open procedure. There were no postoperative complications. The median postoperative stay was a single day (range: 1-7 days) (**Figure 2**).

One patient underwent subsequent diagnostic work-up for recurrent abdominal pain, but no certain explanation for this was found.

## ORIGINAL ARTICLE

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## DISCUSSION

Cholecystectomy is very rarely performed in children. Thus, at our specialised department for paediatric surgery, we only performed 13 cholecystectomies in ten years. This figure should be seen in light of the fact that more than 600 appendicectomies and more than 350 herniotomies were performed during the same period at the department. Whether the few cholecystectomies performed in children reflects a very low incidence of gall stones or a high threshold towards surgery is unknown. We did not study the total number of children who were found to have gall stones by ultrasound or by

other imaging procedures. Thus, the true incidence of gall stones in children in our catchment area remains unknown. It is, however, known that the cholecystectomy rate is not only related to the incidence of gall stones but also to the threshold towards surgery [3].

It is often stated that childhood gall stones most frequently occur in patients with specific risk factors like haemolytic disorders, previous bowel resection or obesity [4]. However, in the present study, the majority of children had no known predisposing factor for the development of gall stones. Recent studies have shown that gall stones found in children with conditions known to increase the risk of developing gall stones are often asymptomatic [5, 6]. In addition, it seems as though some gall stones disappear again at follow-up in these patients [5]. In the present study, we only studied children who had a cholecystectomy. We therefore do not know how many patients with asymptomatic gall stones were diagnosed in the same period, but none of these had surgery because in our study all patients who underwent surgery had recurrent abdominal pain.

The chosen surgical technique and the postoperative stay were very similar to those observed in adults [1]. Thus, the principal surgical procedure was laparoscopic cholecystectomy, and the patients who had this procedure performed could be discharged after 1-2 days. Some children could probably even have been treated on an outpatient basis as suggested in [7], but with only 13 procedures in ten years at our institution, it might be worthwhile to look for other operations that could benefit from a fast track regime.

It is known from adults that approximately 10% of the patients suffer from recurrent abdominal pain following cholecystectomy [2]. This figure is similar to that observed in our population of children who had cholecystectomy.

Thus, the short-term outcome of cholecystectomy in children seems to be good. It is, however, not known if there are any long-term drawbacks when a child has been cholecystectomised, but a large case-control study indicates that patients who have their gallbladder removed at least do not have an increased risk of developing cancer [8].

In conclusion, cholecystectomy is rarely performed in children, and when so, it is mostly performed in otherwise healthy children. The surgical techniques deployed and the duration of the postoperative stay are very similar to those observed in adults.

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**CONFLICTS OF INTEREST:** None

## LITERATURE

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