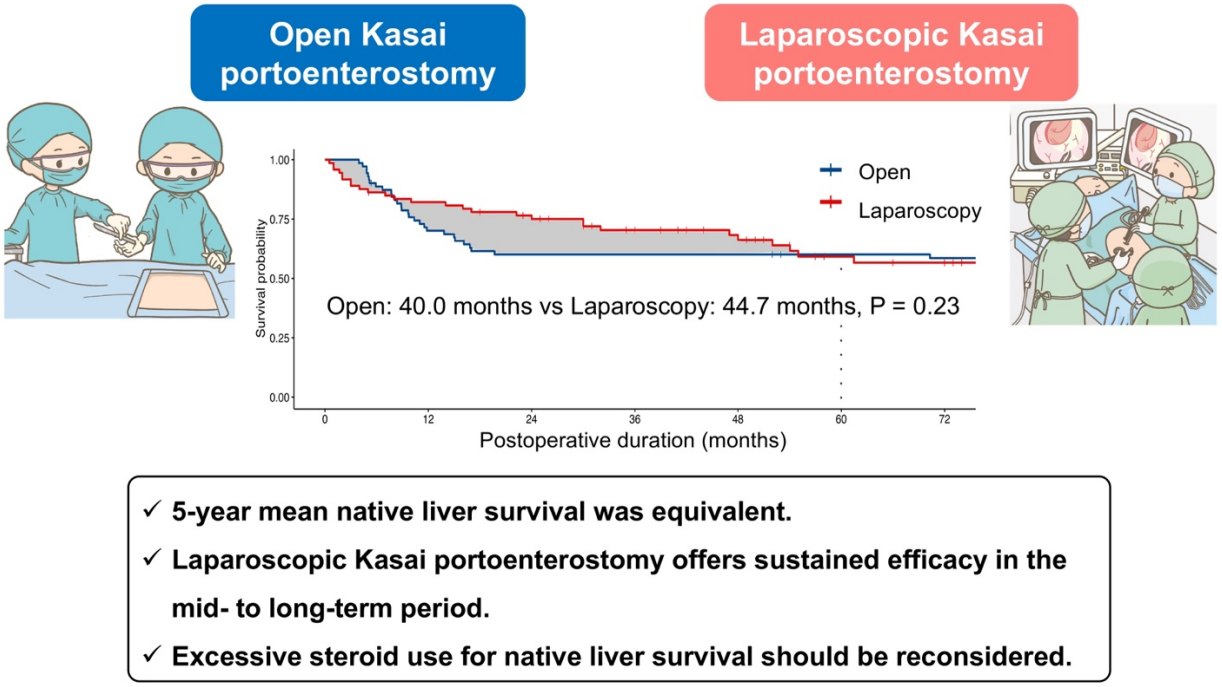
News Release

Laparoscopic Kasai Portoenterostomy for Biliary Atresia Demonstrated Long-Term Efficacy Equivalent to the Open Procedure

Key Points

- The optimal surgical procedure and postoperative adjuvant therapy for biliary atresia remain subjects of ongoing debate.
- In this study, we evaluated the impact of laparoscopic versus open Kasai portoenterostomy on long-term native liver survival in 356 children with biliary atresia over a 22-year period at international pediatric surgical centers.
- Laparoscopic Kasai portoenterostomy showed native liver survival at 5 years postoperatively comparable to that of the conventional open approach.
- High-dose steroid therapy (exceeding 90 mg/kg prednisolone equivalent) was associated with liver transplantation and did not improve long-term native liver survival.



✓ **5-year mean native liver survival was equivalent.**

✓ **Laparoscopic Kasai portoenterostomy offers sustained efficacy in the mid- to long-term period.**

✓ **Excessive steroid use for native liver survival should be reconsidered.**

Yoichi Nakagawa, et al. Hepatobiliary Surgery and Nutrition 2025, DOI: 10.21037/hsbn-2025-143

Summary

Researchers at Nagoya University, Kagoshima University, Juntendo University, and the University of Hong Kong have demonstrated that laparoscopic Kasai portoenterostomy for biliary atresia offers native liver survival comparable to the conventional open procedure in the mid- to long-term.

Biliary atresia is a disease characterized by the idiopathic obstruction of the bile ducts during the neonatal to infantile period, leading to progressive liver cirrhosis. Approximately half of the patients ultimately require liver transplantation. The standard treatment is surgical intervention known as the Kasai portoenterostomy. In recent years, a less invasive laparoscopic approach has been increasingly adopted; however, its mid- to long-term efficacy—particularly beyond two years postoperatively—has not been sufficiently evaluated.

In this study, we evaluated the impact of laparoscopic versus open Kasai portoenterostomy on long-term native liver survival in 356 children with biliary atresia treated over 22 years at international pediatric surgical centers. Our results demonstrated that native liver survival at 5 years postoperatively was comparable between the laparoscopic and open procedures.

A secondary analysis further revealed that patients who received high-dose steroids (prednisolone equivalent >90 mg/kg) postoperatively were more likely to undergo liver transplantation, suggesting that excessive steroid administration may not improve long-term native liver survival.

These findings support the use of laparoscopic Kasai portoenterostomy as a standard treatment option for biliary atresia. Moreover, the study highlights the need to reconsider the use of high-dose steroids aimed at prolonging native liver survival.

This study was published online in *Hepatobiliary Surgery and Nutrition* on November 24, 2025.

Research Background

Biliary atresia is a disease characterized by idiopathic bile duct obstruction during the neonatal and infantile periods, leading to cholestasis and cirrhosis (Figure 1). The definitive treatment is a surgical procedure called the Kasai portoenterostomy; however, approximately half of the patients progress to liver failure by adulthood, making biliary atresia a leading cause of pediatric liver transplantation.

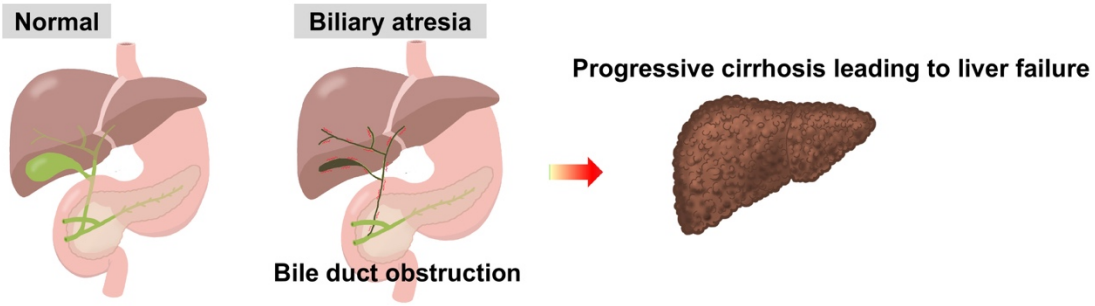


Figure 1. Pathophysiology of biliary atresia

To achieve long-term survival with the patients' native liver and avoid liver transplantation, various surgical techniques and postoperative management strategies have been explored. One notable surgical advancement is the adoption of minimally invasive laparoscopic Kasai portoenterostomy, which has been reported to provide native liver survival rates comparable to the conventional open Kasai procedure at 2 years postoperatively. However, its mid- to long-term outcomes remain insufficienty evaluated, and it has not yet been established as a standard treatment. In addition, the effectiveness of postoperative steroid adjuvant therapy–a widely used medical management strategy–remains controversial, particularly regarding its potential to improve long-term native liver survival. Given these uncertainties, this study aimed to assess the impact of laparoscopic Kasai portoenterostomy and postoperative steroid therapy on long-term native liver survival, using data from an international multicenter collaborative study.

Research Results

This study analyzed 356 children with biliary atresia who underwent Kasai portoenterostomy between January 2000 and December 2022 at Nagoya University, Kagoshima University, Juntendo University, and the University of Hong Kong. To account for potential confounding factors affecting treatment outcomes–such as age at surgery and steroid dosage–propensity score matching was performed. Mid- to long-term native liver survival was then compared between patients undergoing laparoscopic and open Kasai portoenterostomy. The results demonstrated that native liver survival at 5 years postoperatively was comparable between the two groups, supporting the mid- to long-term efficacy of the laparoscopic approach (Figure 2).

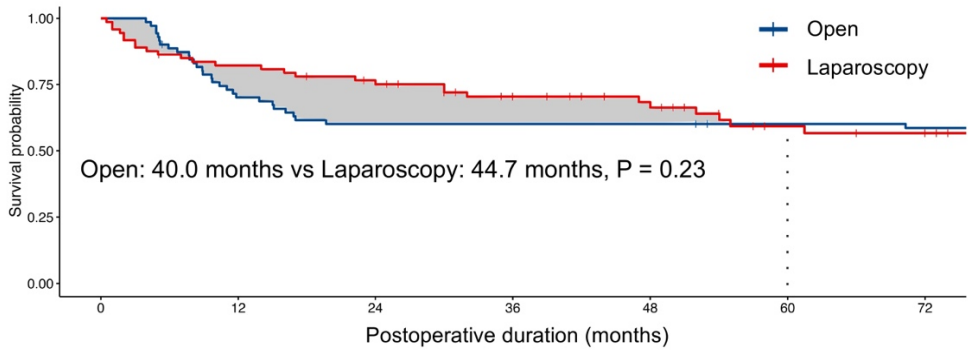


Figure 2. Mean native liver survival time within 5 years postoperatively

Additionally, in a secondary analysis, we investigated risk factors for liver transplantation and found that a higher total postoperative steroid dose was significantly associated with an increased risk of liver transplantation. Specifically, when native liver survival curves were plotted using a steroid dose cutoff of 90 mg/kg prednisolone equivalent, the high-dose group showed a significantly shorter survival time (Figure 3).

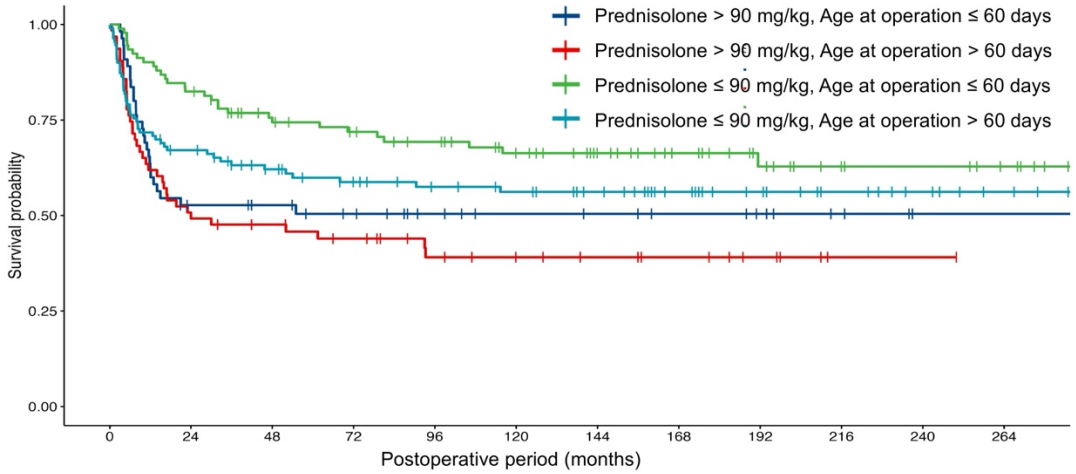


Figure 3. Native liver survival curves stratified by age

Research Summary and Future Perspective

This research suggests that laparoscopic Kasai portoenterostomy can be a standard treatment option for biliary atresia in the future. Excessive steroid therapy for long native liver survival needs to be re-evaluated

Publication

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