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# ASO Author Reflections: Surgical Strategy for Perihilar Cholangiocarcinoma

Pim B. Olthof, MD, PhD<sup>1,2,3</sup>, and Bas Groot Koerkamp, MD, PhD<sup>1</sup> on behalf of the Perihilar Cholangiocarcinoma Collaboration Group

<sup>1</sup>Department of Surgery, Erasmus Medical Center, Rotterdam, The Netherlands; <sup>2</sup>Department of Surgery, Amsterdam UMC, Amsterdam, The Netherlands; <sup>3</sup>Department of Surgery, University Medical Center, Groningen, Groningen, The Netherlands

## PAST

The goal in the surgical treatment of perihilar cholangiocarcinoma is complete R0 resection, which usually requires major liver resection. The extent of biliary or vascular involvement can dictate the side of the liver that has to be resected. In other cases, a left- or right-sided liver resection can be chosen, which is a frequent subject of debate. Often, an extended right hepatectomy is advocated for the highest probability of R0 resection, however this is associated with a high risk of liver failure due to the small liver remnant.<sup>1,2</sup>

## PRESENT

We performed a large retrospective study on 816 patients who underwent left-sided liver resection and 855 patients who underwent right-sided liver resection for perihilar cholangiocarcinoma.<sup>3</sup> The 90-day mortality rate after right-sided resection was twice that after left-sided resection (18% vs. 9%;  $p < 0.001$ ). Positive resection margins were similar for both groups but median overall survival was 23 months after right-sided liver resection and 30 months after left-sided liver resection ( $p < 0.001$ ).

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P. B. Olthof, MD, PhD  
e-mail: p.olthof@erasmusmc.nl

## FUTURE

This study is the largest to date on this subject and highlights that a left-sided resection strategy is better tolerated and is associated with better survival. This study contradicts that extended right hepatectomy should be preferentially performed for perihilar cholangiocarcinoma. It also highlights that the perioperative risks of perihilar cholangiocarcinoma surgery are among the highest of any elective cancer surgery. Modifiable risk factors to decrease liver failure after extended right hepatectomy include better preoperative biliary drainage with less preoperative cholangitis, and liberal use of portal/hepatic vein embolization.<sup>4,5</sup> A prospective study including all surgical decision-making details might be essential to finally settle the debate on the optimal surgical approach.

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## REFERENCES

1. Lang H, van Gulik TM. Extended right-hemihepatectomy is preferred for perihilar cholangiocarcinoma. *Ann Surg*. 2021;274(1):33–4.
2. Matsumoto N, Ebata T, Yokoyama Y, Igami T, Sugawara G, Shimoyama Y, et al. Role of anatomical right hepatic tri-sectionectomy for perihilar cholangiocarcinoma. *Br J Surg*. 2014;101(3):261–8.
3. Olthof PB, Erdmann JI, Alikhanov R, et al. Higher postoperative mortality and inferior survival after right-sided liver resection for perihilar cholangiocarcinoma: left-sided resection is preferred when possible. *Ann Surg Oncol*. 2024. <https://doi.org/10.1245/s10434-024-15115-0>
4. Olthof PB, Wiggers JK, Groot Koerkamp B, Coelen RJ, Allen PJ, Besselink MG, et al. Postoperative liver failure risk score: identifying patients with resectable perihilar cholangiocarcinoma who can benefit from portal vein embolization. *J Am Coll Surg*. 2017;225(3):387–94.
5. Wiggers JK, Groot Koerkamp B, Cieslak KP, Doussot A, van Klaveren D, Allen PJ, et al. Postoperative mortality after liver resection for perihilar cholangiocarcinoma: development of a risk score and importance of biliary drainage of the future liver remnant. *J Am Coll Surg*. 2016;223(2):321–31 e1.

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