

The use of internal biodegradable stents to reduce pancreatic fistula rates in high-risk anastomoses

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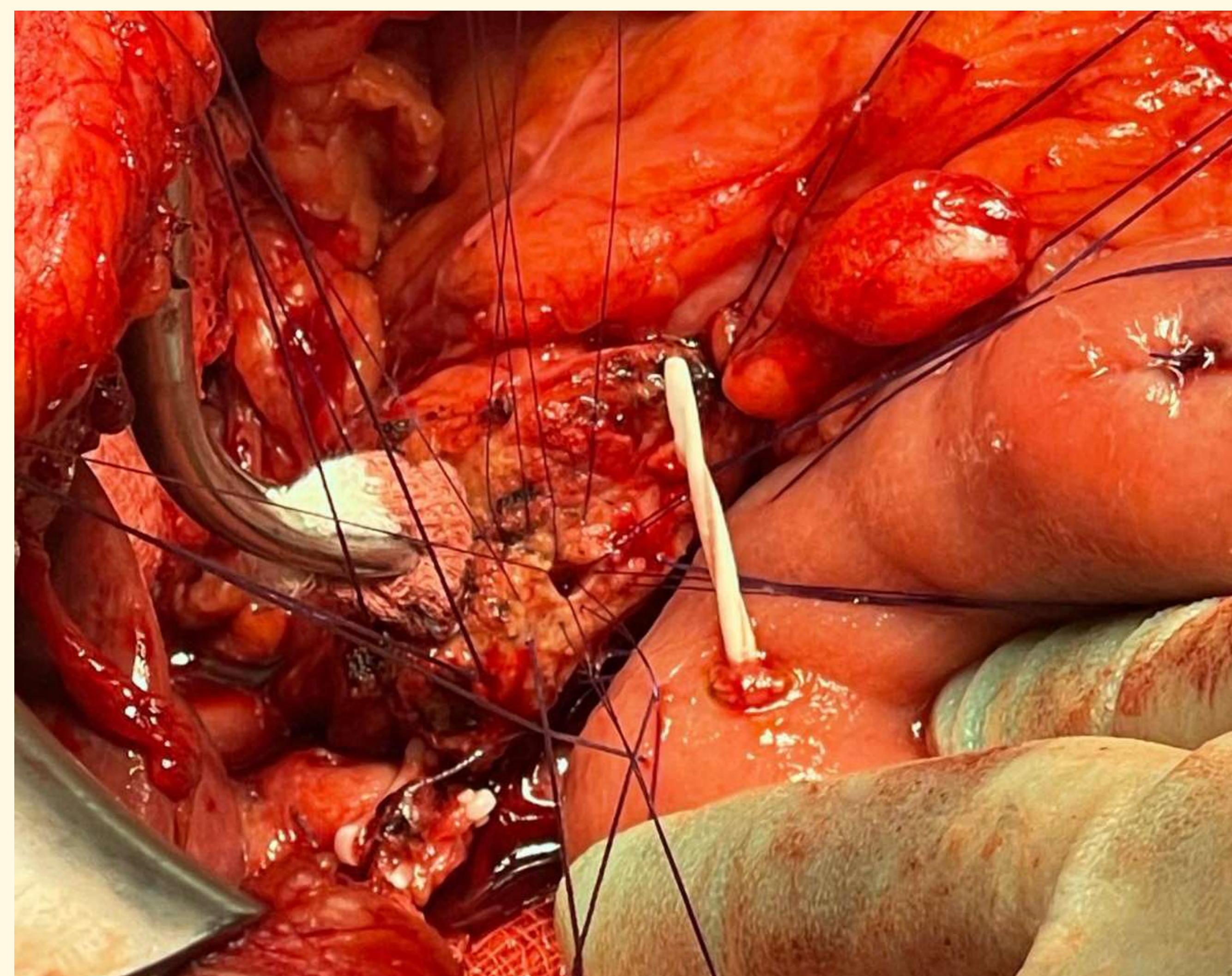


Introduction:

Clinically relevant postoperative pancreatic fistula (CR-POPF) is the most serious complication after pancreatic resection, as it is associated with high-morbidity and mortality. Numerous techniques have been proposed to eliminate the incidence of CR-POPF. A novel method is the use of a trans-anastomotic internal biodegradable stent (IBS) during the formation of the pancreaticojejunostomy (PJ).

Methods:

We compared the outcomes of patients with intermediate, and high-risk for the development of POPF after pancreaticoduodenectomy (PD), with or without the use of an Archimedes™ IBS at the Royal Surrey NHS Foundation Trust, UK. Fistula-risk score determines intermediate risk as 3 to 6; and high risk as 7 to 10.



PJ anastomosis was performed according to Cattell-Warren or Blumgart, depending on the surgical approach (open or robotic).

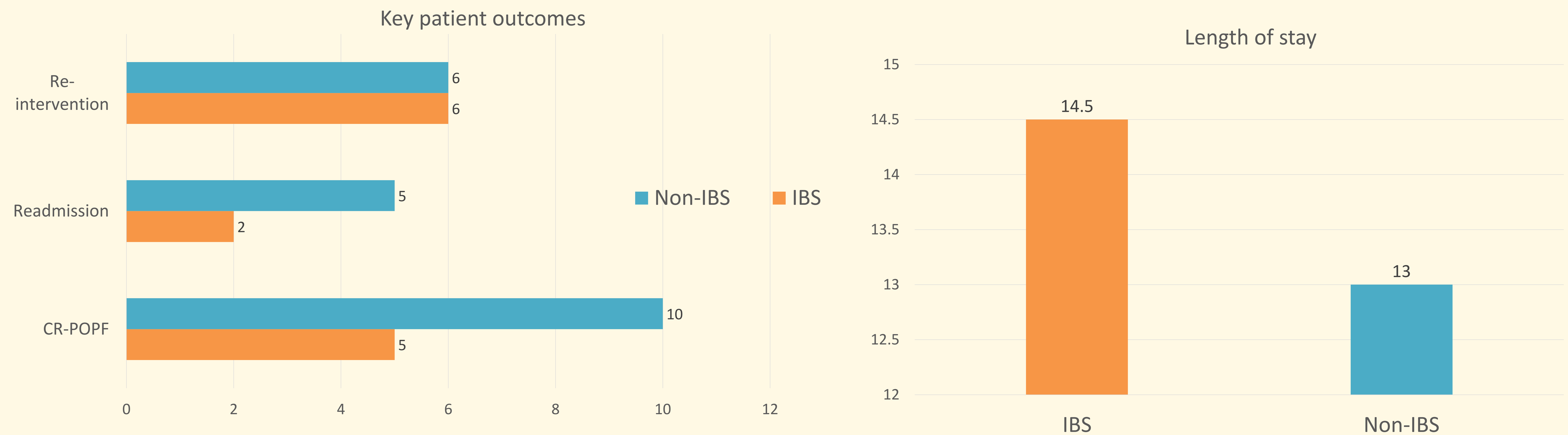
All patients were evaluated for complications (Clavien-Dindo), CR-POPF, post-pancreatectomy haemorrhage (PPH), stent displacement, and length of stay (LoS).

Results:

Between January 2023 to October 2024, 50 PDs were included. There were 25 intermediate and high-risk cases that used an IBS. These were matched with 25 intermediate, and high-risk cases with similar tumour/patient characteristics in which an IBS was not used.

Five of the 25 IBS cases developed CR-POPF (19.2%), 2 patients were re-admitted (8%), 6 patients required re-intervention (24%). The median timing of drain removal was day 7 (range 3-54), and median LoS was 14.5 days (range 6-55). Seven developed Clavien-Dindo > Grade III complications (28%)>

Ten of the 25 non-IBS cases developed CR-POPF (40%), 5 patients were re-admitted (20%), 6 patients required re-intervention (24%). The median timing of drain removal was day 9 (range 3-42), and median LoS was 13 days (range 7-45). Five cases developed Clavien-Dindo >Grade III complications (20%). There were no mortalities in either group.



Conclusion:

The use of the Archimedes™ IBS during PJ after PD showed encouraging results, in terms of reduced incidence and severity of CR-POPF and was associated with shorter earlier removal of drains but longer LoS. Significance ($p < 0.05$) was not reached with the current cohort of patients.

These results could justify IBS use in patients at higher risk of developing CR-POPF as it may reduce severity however, further larger studies are needed before supporting the use of the Archimedes™ IBS as a mitigation strategy.