

Editorial/Commentary

Hyaluronate carboxymethylcellulose-based bioresorbable membrane facilitates a two-stage pancreaticoduodenectomy: unnecessarily necessary?

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Running Head: Hyaluronate carboxymethylcellulose membrane and two-stage pancreaticoduodenectomy

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3 Yamazaki and colleagues [1] have presented an interesting retrospective cohort study on
4 the safety and feasibility of the use of a hyaluronate carboxymethylcellulose (HCM)-based
5 bioresorbable membrane to reduce adhesions at the second stage of a two-stage
6 pancreaticoduodenectomy performed 4 to 8 weeks after the initial resection. The authors
7 have reported reduced adhesions, thereby facilitating the second-stage reconstruction.
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10 There was also formation of good granulation tissue around the exteriorized pancreatic
11 fistula despite the presence of the HCM-based membrane. The authors used operative
12 duration and blood loss at the second stage as markers for the efficacy of the HCM-based
13 membrane, but found no difference between the HCM-based membrane group (n=61) and
14 the historical control group in which the HCM-based membrane was not used (n=145) in the
15 rate of pancreatic fistula formation.
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32 Although the efficacy of HCM-based membranes in reducing intra-abdominal adhesions
33 after surgery is well established [2], there are no previous reports on their use in two-stage
34 pancreatic surgery. However, this study [1] is limited by the inherent bias associated with
35 retrospective cohort studies. Additionally, it is restricted by the fact that a two-stage
36 pancreaticoduodenectomy for cancer is not standard procedure across the vast majority of
37 centres outside Japan. The two-stage procedure with planned readmission was directed
38 towards patients at high-risk for a pancreatic anastomotic leak and the authors demonstrate
39 an excellent 0% mortality, albeit with much longer hospital stays than seen in other centres.
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54 There are several issues related to the study [1]. Although a two-stage
55 pancreaticoduodenectomy may be justified in certain situations, such as damage-limitation
56 surgery for pancreatic trauma [3], the drawbacks of the procedure have been highlighted
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3 previously [4] and include increased morbidity, barriers to the delivery of adjuvant therapy,
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5 and a negative impact on both health economics and quality-of life. It is remarkable that the
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7 vast majority of procedures performed in this study [1] were two-stage operations [213
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9 (87.3%) two-stage *versus* 31 (12.7%) single-stage over 7 years]. It is difficult to reconcile this
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11 with the contention that two-stage procedures were performed only for patients deemed to
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13 be at high-risk of pancreatic leak. The authors did not perform an assessment of the risk of
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15 pancreatic leak using scoring systems to inform this decision. Cumulatively, the complication
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17 rate across the two-stage procedures was higher than rates for a single stage procedure
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19 when compared with the majority of high-volume pancreatic centres [5]. The additional
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21 comorbid burden placed by a second procedure with an iatrogenic external fistula as well as
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23 the obstacle this would place in the provision of adjuvant chemotherapy and the negative
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25 impact on the individual patient's quality of life complicates the picture. It is also important
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27 to note that seven patients were excluded from the analysis because the second operation
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29 was not performed for a variety of reasons that included disease progression (n=5), cerebral
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31 infarction (n=1) and patient refusal (n=1).
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42 While we appreciate that the use of the HCM-based membrane reduced adhesions at the
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44 second stage, it is difficult to rationalise how the presence of the HCM-based membrane
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46 would reduce adhesions on one hand and promote good external fistulisation with
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48 granulation tissue formation on the other. As a marker of ease of second stage laparotomy,
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50 the reduction in blood loss in the HCM-based membrane group compared with the control
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52 group, although statistically significant, was clinically negligible (36 vs. 58 ml). There was a
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54 longer operative duration in the control group than in the HCM-based membrane group
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56 (151 vs. 105 min) for the second stage operation. However, it is difficult to envisage how the
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3 second stage reconstruction could have been performed at the lower limit of the quoted
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5 range of the operative duration of 30 minutes in both groups. Nevertheless, despite
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7 concerns about the need for a two-stage pancreaticoduodenectomy, this study is useful in
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9 demonstrating that HCM-based membranes can be used safely in patients who undergo this
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11 procedure.
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