Formation and Regrowth of Intra-Abdominal Adhesions after Adhesiolysis: The Paradox of Surgical Adhesion-Reduction Strategies

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We have followed with interest the publications of Swank et al. [1] concerning surgical adhesion-reduction strategies for the management of pelvic pain and wish to respond to their latest article, published in January 2004, which discusses the incidence/extent of intra-abdominal adhesion formation/reformation following laparoscopic adhesiolysis.

The role of intra-abdominal adhesions in the development of chronic pelvic pain remains a matter of debate [2]. Similarly, the efficacy of surgical adhesion-reduction strategies for pain management has been disputed for some time [2]. This article adds to the growing body of evidence in favour of a link between adhesions and pelvic pain [3] and provides an important discussion of the merits of adhesiolytic strategies.

In two previous publications, the authors highlight the high risks of bowel perforation associated with adhesiolysis [4, 5] and the lack of difference in pain scores between patients managed by diagnostic laparoscopy or adhesiolytic laparoscopy [5]. In the later publication [5], the authors conclude that diagnostic laparoscopy is invaluable for identifying causes of pelvic pain, but warn that laparoscopic adhesiolysis is associated with considerable morbidity and is no more beneficial than diagnostic laparoscopy for pain relief.

In the present article, the authors argue that laparoscopic adhesiolysis significantly reduces the incidence, extent and severity of adhesions between peritoneal organs and the abdominal wall, and suggest that laparoscopy is less adhesiogenic than laparotomy, as has been asserted elsewhere [6]. However,

they show no significant reduction in the quantity/quality of adhesions between organs and state that de novo adhesion formation occurred in 20% of patients. Although the patient cohort was small ($n = 24$), these data, in conjunction with their previous findings, highlight the limitations of surgical adhesion management strategies and emphasise the paradox that adhesiolysis may initiate adhesion development.

Numerous studies have drawn attention to the adhesive burden associated with open abdominal surgery [3, 7]. In our own investigations in the Surgical and Clinical Adhesions Research (SCAR) [8] and the more recent SCAR-2 [9, 10] studies, we have revealed the considerable burden and risk of adhesions following both laparoscopic and open abdominopelvic surgery.

We believe that, in the context of these studies, the findings presented here highlight the importance of preventive rather than curative strategies for adhesion control. By employing good surgical techniques and adhesion-reduction agents in concert with appropriate, minimally invasive access techniques, we may help to reduce this burden and minimise the risks of chronic pain, as well as small bowel obstruction, in patients who have undergone abdominopelvic surgery.

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Reply

We would like to thank Menzies and Parker for their response on our article concerning the regrowth of adhesions after laparoscopic adhesiolysis [1]. Instead of surgical therapy, they argue for a preventive non-surgical strategy to solve the adhesion burden. We agree that the efficacy of surgical strategies for adhesion-related disorders, like infertility, bowel obstruction and chronic abdominal pain, remain at least a matter of debate.

Second-look laparoscopy after laparoscopic adhesiolysis for infertility uncovers the regrowth of adhesions in 55–100% of patients [2]. Although the chance of infertility is correlated with the severity of adnexal adhesions, the chance of pregnancy did not increase after early second-look laparoscopic adhesiolysis compared with that in patients who did not undergo re-laparoscopy and adhesiolysis [3].

Treatment of small bowel obstruction is predominantly the management of postoperative adhesions [4]. In more than 70% of patients small bowel obstruction was caused by adhesions, which in 35–87% of cases can be successfully lysed laparoscopically [5]. The conversion rate was 32% due to failure to identify the obstructing adhesion to an iatrogenic perforation, and due to technical difficulties. Moreover, in more than 50% of patients the obstruction recurred [6]. So, in bowel obstruction, surgical adhesiolysis treats a symptom, and that for a limited period of time, and is not the solution for the adhesion illness.

Like many other authors, we were convinced of the benefit of laparoscopic adhesiolysis for chronic abdominal pain. In our prospective study looking for predictive factors, 224 patients with chronic pain underwent laparoscopic adhesiolysis. Three months later, 74% of these patients were pain free (40%) or had less pain (34%) [7], a striking result for patients suffering from chronic pain for many years. Another study notes the incompleteness in 22% of 174 consecutive laparoscopic adhesiolysis procedures, besides the occurrence of 16 (9%) ma-

ior complications (perforations) [8]. Eighty percent of patients were pain free or had less pain, but the results were independent of the completeness of the adhesiolysis and related to the occurrence of complications. With new techniques (ultrasonic dissection; opti-view trocar) the complication rate decreased to 5%. We wanted to publish these results in order to stimulate colleagues in surgery to do laparoscopic adhesiolysis on patients with chronic pain. However, after a randomized study (forced by our statistician W.C.J. Hop and Prof. Jeekel to get a PhD) we had to conclude that the results of laparoscopic adhesiolysis versus diagnostic laparoscopy only differ in complications and not in benefit [9]. This changes our opinion that laparoscopic adhesiolysis is no longer indicated for chronic abdominal pain.

A significant reduction in adhesions between organs and the abdominal wall was demonstrated in 24 patients at second-look re-laparoscopy a mean of 16 months after laparoscopic adhesiolysis for treatment of chronic pain [1]. This might partially explain the relief of pain after adhesiolysis of the adhesions fixed to the abdominal wall. No permanent reduction in adhesions between organs occurred, and that is probably the reason for the frequent recurrence of bowel obstructions.

Surgery is not the solution for the adhesion-related disorders and can even aggravate them, but the laparoscopic technique may assist in reducing the burden.

Menzies and Parker advocate the application of adhesion reduction agents, but their opinion can only be based on quantitative adhesion studies and that is not the same as clinical effectiveness. A randomized controlled trial to prove the benefit of these agents needs at least 5,700 patients and is cost-effective in case of a 16% reduction in adhesion-related admissions after 3 years and will cost GBP 300,000 [10]. A European trial can solve this question, perhaps with financial support from the National Health Services or from the EU? We would like to participate in such a trial.

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