

Pelvic adhesions and pelvic pain: opinions on cause and effect relationship and when to surgically intervene

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Keywords

abdominal pain, adhesiolysis, adhesions, clinical decision making, pelvic pain.

ABSTRACT

Objective In the absence of definitive data, we sought to determine the consensus on the contribution of adhesions to pelvic pain.

Methods Impressions about the role of adhesion location, extent, and severity of pelvic pain, were surveyed among 13 gynaecological surgeons. They were asked whether adhesions covering specific organs to a varying extent would be likely to cause pain significant enough to require pain medication, or to lead a woman to alter her normal activities, and when they would recommend surgery to reduce pelvic pain.

Results Women with dense vascular adhesions covering all of the uterus but not the bowel or adnexal structures were thought to have a $49 \pm 9\%$ likelihood of having pelvic pain; this fell to a $34 \pm 7\%$ and $18 \pm 5\%$ likelihood of pain if 60% or 20%, respectively, of the uterus was involved with adhesions. Similar observations were made for adhesions involving the posterior cul-de-sac and large bowel. However, adhesions involving the anterior cul-de-sac were thought to be less likely to cause pain. Women with total involvement of both tubes and ovaries with dense, vascular adhesions were thought to be $60 \pm 9\%$ likely to have pelvic pain; reduction in extent of adhesions to 50% or 25% reduced the prediction of pain to $38 \pm 5\%$ and $21 \pm 3\%$, respectively. In contrast, filmy adhesions to both tubes and ovaries, were thought to cause pain in $46 \pm 9\%$, $26 \pm 5\%$, and $13 \pm 3\%$ of women, respectively, according to extent. Half the surgeons said they would recommend surgery for patients with pain and dense adhesions involving 15% of both tubes and ovaries; 10 recommended surgery if it was known that adhesions involved 100% of both ovaries and tubes. Surgeons were only slightly less likely to recommend surgery for pain relief for adhesions involving either both tubes or both ovaries or for pain associated with unilateral tubal and ovarian adhesions. For bilateral tube and ovary adhesions, surgery was equally likely to be recommended for relief of pain when adhesions were cohesive and dense; for adhesions which were filmy, surgery was less likely to be recommended. For dense adhesions involving 20%, 40%, 60%, and 80% of the uterine surface, surgery was recommended by 42%, 58%, 83% and 92% of surgeons, respectively. Posterior cul-de-sac involvement resulted in recommendation of surgery by 50%, 83%, 92%, and 100% of surgeons, respectively; however, for corresponding amounts of anterior cul-de-sac adhesions, surgery was recommended by only 17%, 33%, 67%, and 75% of surgeons.

Conclusions (1) Adhesions are frequently considered to be a cause of pelvic pain; (2) the likelihood of discomfort is related to location, extent, and to a lesser degree, the severity of adhesions, and (3) adhesiolysis is thought to provide the potential for pain relief.

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INTRODUCTION

The relationship of pelvic adhesions to pelvic pain remains extremely controversial.¹ Nonetheless, a recent survey of gynaecological surgeons has indicated that 40% of laparoscopies are performed for the diagnosis and/or treatment of pelvic pain.² Thus there exists a tremendous need to provide guidance for preoperative patient counselling concerning both the likelihood that adhesions in the pelvis would be associated with pelvic pain, and whether surgical adhesiolysis would be expected to be beneficial.

Unfortunately, objective assessment of this issue is difficult because of the possible subjective components of pelvic pain, and the wide variation in adhesions between patients (including sites involved, the extent and the severity). In view of these difficulties, this paper was prepared as an attempt to provide a clinical consensus on the likely contribution of pelvic adhesions to pelvic pain, as judged by the opinions of experienced gynaecological surgeons.

MATERIALS AND METHODS

A total of 13 gynaecological surgeons were surveyed to establish their clinical impression of (a) the likelihood that adhesions would contribute to pelvic pain, based on the sites involved, the extent of involvement, and the type of adhesions, and (b) if they knew that the aforementioned adhesions were present in a patient with pelvic pain, whether they would recommend surgery for that patient in an attempt to reduce the pain.

A total of 126 scenarios with differing sites, extent and severity of adhesions were assessed. Extent was defined as the percentage of each site involved with adhesions, with increments in extent of adhesions ranging from intervals of 5% to 20%. Severity was defined as fine and filmy adhesions, dense and/or vascular adhesions or cohesive adhesions. In an attempt to provide an indicator of surgeon consistency, two equivalent scenarios involving the contralateral sides of the pelvis were included (i.e. adhesions were described as involving the right or left side adnexal structures).

Initial analysis of the individual observer expressed likelihood of pain, given the extent of adhesions at the various locations, used a general linear model with terms for all factors and their interactions with the observer. The significant ($P < 0.05$) interactions implied that the expressed chance for any given extent of adhesion varied among the observers; in particular

the rate at which the likelihood increased as the extent increased differed from observer to observer.

For this reason, the individual observers' responses were averaged. Then, a general linear model was used to represent the average likelihood of pain. It included terms for all factors as well as terms for the lack of fit. The lack of fit terms, were all non-significant ($P > 0.10$) implying that, for all practical purposes, linear models were an adequate representation of the relationship.

The final analyses used a categorical term for the location of the adhesion, a continuous term for the extent and a term for the interaction of extent and location to model the likelihood of pain averaged over the observers. The interaction was used to test for differences between locations in the rate of increase of the chance of pain as the extent of the adhesion increased. If the overall test for the interaction was significant, all pairwise comparisons of the rates at the different locations were performed.

All analyses were performed using PROC GLM on PC-SAS. Data are expressed as mean \pm SEM. Significance was defined as $P < 0.05$.

RESULTS

The extent of involvement with adhesions was thought to have a high likelihood of being associated with the existence of pelvic pain. As shown in Fig. 1(a) and (b), at all sites the likelihood of having pain increased proportionally to the extent of involvement at each site. The rate of increase depended upon the site involved. Interestingly, even in the absence of adhesions (and other pelvic pathology), it was thought that a small percentage of patients would describe pain. Also, even in those scenarios in which reproductive organs were totally involved in adhesions, it was thought that the maximum percentage of patients with pain would be approximately 60–70%. Thus, extensive adhesions are expected to be identified in some patients with no description of pelvic pain. Furthermore, based on the clinical impressions of the participating surgeons, a reduction in extent of adhesions at each of these sites should be associated with a reduced likelihood of having pelvic pain.

The effect of site involvement by adhesions on the likelihood of having pain varied slightly (Fig. 1(a) and (b)). Adhesions of the ovaries were thought to be associated with more discomfort than tubal adhesions ($P < 0.05$). Among other pelvic sites, the regression statistics were indistinguishable, except for anterior cul-de-sac adhesions which were thought to be least likely to be associated with pain ($P < 0.05$). Lastly, with regard to

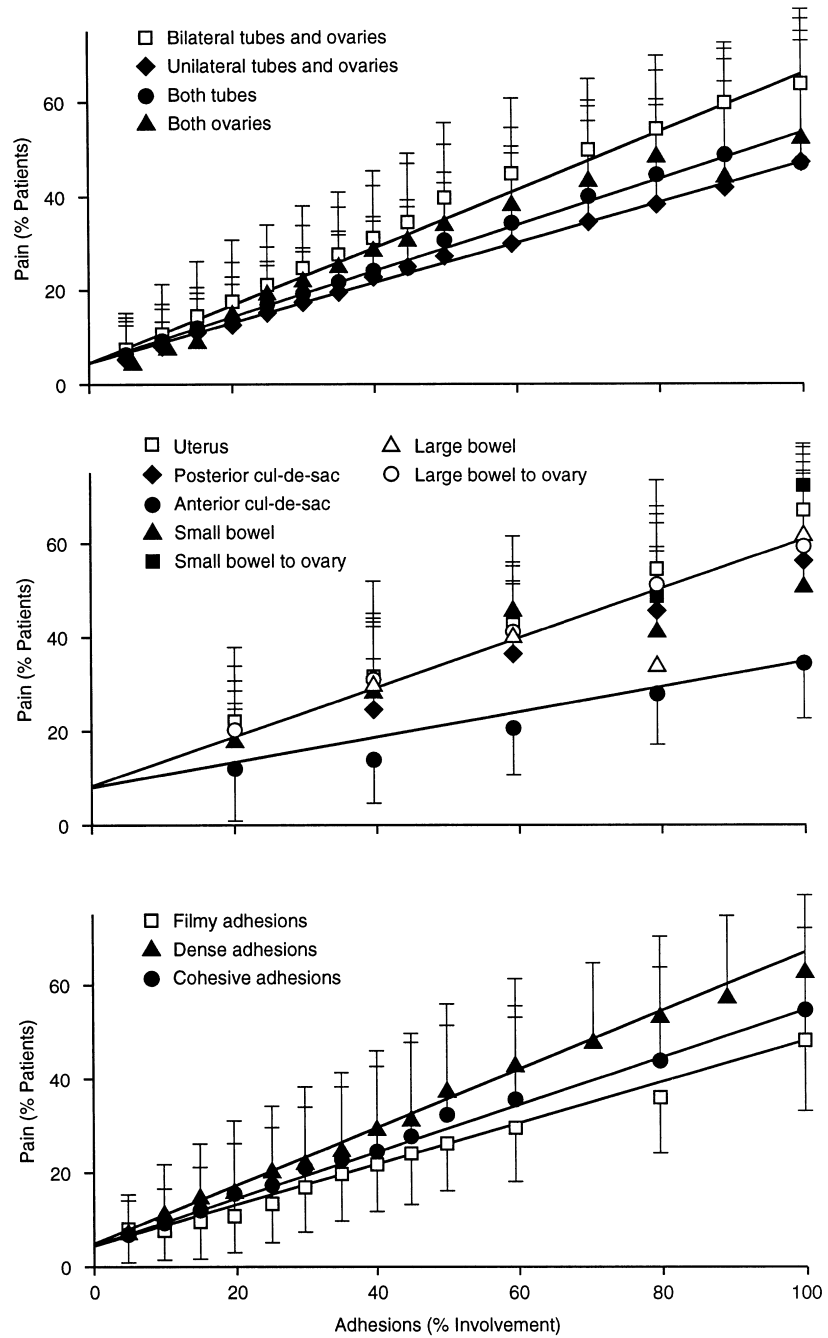


Figure 1 Relationship of variable extent of adhesions to pelvic pain in women: (a) with location of adhesions at adnexal structures, and (b) location at other pelvic sites; (c) as a function of the severity of adhesions.

the severity of adhesions, no differences were thought to exist between cohesive and dense vascular adhesions involving both tubes and ovaries; filmy adhesions were slightly less associated with pain (Fig. 1(c)).

As with the likelihood of having pain associated with adhesions, surgery would be recommended for treatment of pelvic pain in patients with known adhesions as a function of the extent of involvement, and the sites involved. As seen in Fig. 2(a) and (b), in patients with

pelvic pain for 1 year, surgery would be recommended by one-third of the physicians for adhesions involving 20% of all sites except the anterior cul-de-sac, increasing to 58%, 67%, and 83% of surgeons as the percentage involvement with adhesions increased to 40%, 60%, and 80%, respectively.

Recommendations for performance of surgery for women with bilateral tube and ovary involvement were similar for cohesive and dense, vascular adhesions; the

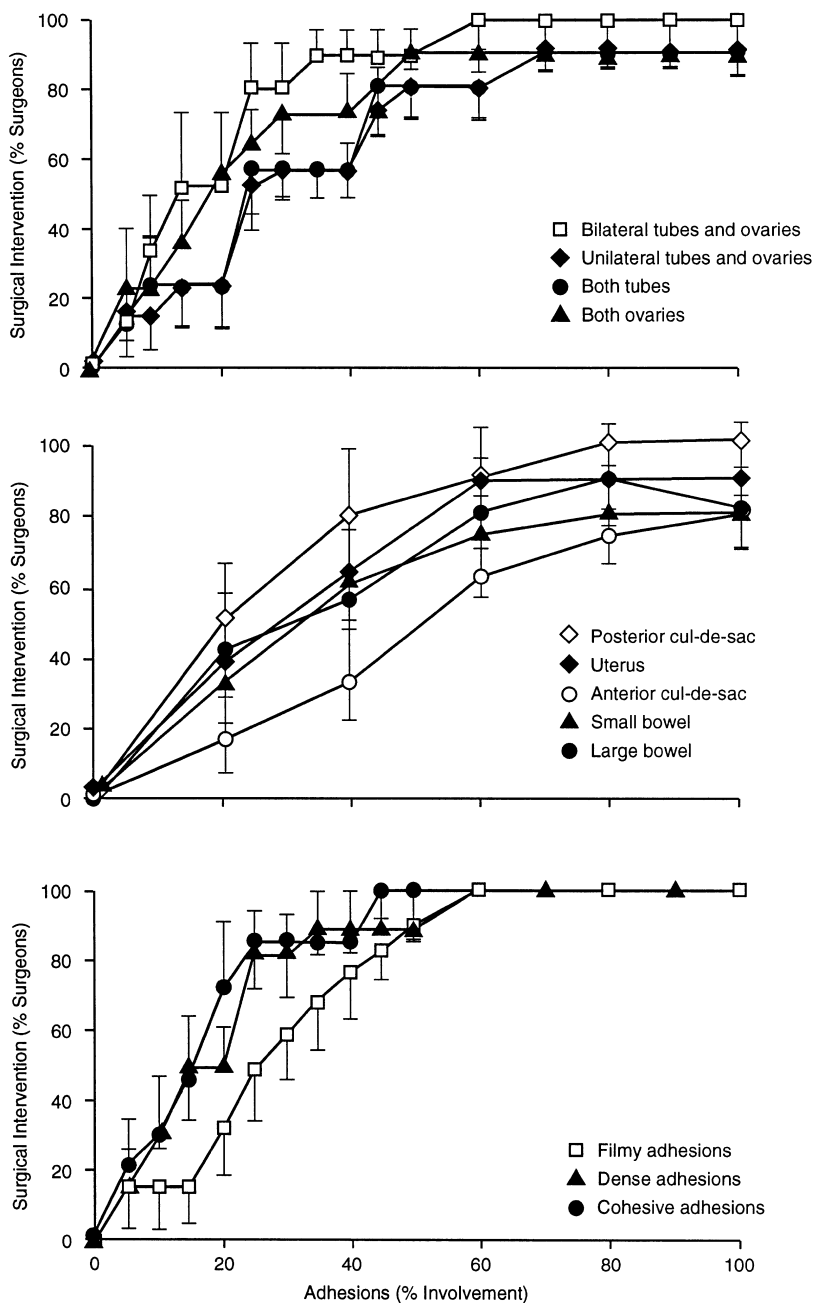


Figure 2 Likelihood of recommending surgery to a patient known to have adhesions, according to extent: (a) involving adnexal structures, and (b) involving other pelvic sites; (c) as a function of the severity of adhesions.

likelihood of recommending surgery for filmy adhesions was slightly less (Fig. 2(c)). Interestingly, all surgeons recommended surgery for women with pelvic pain when any type of adhesions involved over 50% of the adnexal structures.

DISCUSSION

Objective determination of the contribution of adhesions to pelvic pain has been limited by the subjective

nature of descriptions of pain, lack of knowledge of the presence, location, and extent of pain, the type of adhesions, and involvement of multiple sites. In fact, the existence of such a relationship is controversial; several reports have failed to identify a definitive relationship between adhesions and pain.

In a retrospective review of procedures performed by multiple surgeons, Rapkin³ described 100 women with chronic pelvic pain and 88 with infertility, who underwent laparoscopy with the finding of pelvic adhesions

in 26 of 34 (76%). Only four of the 34 infertility patients (12%) with adhesions described pain. Furthermore, there were no significant differences between the location or density of adhesions among women with chronic pain or infertility.

In contrast, in a prospective report by Stout *et al.*⁴ self-reporting of the presence or absence of pelvic pain in 102 women was correlated with the American Fertility Society (AFS) classification of endometriosis and adhesions, although the extent of disease was not related to the degree of pain or impairment. Interestingly, when the pelvic region was divided into seven regions in women with pathology, an exact match between the site of the lesion and pain occurred in 25%, while only 3% described pain in areas away from the lesion. The remaining 72% described areas of pain which included the area of pathology, but either extended beyond it or were confined to a smaller area.

Several reports have identified a high incidence of pelvic pathology in women with pelvic pain. Goldstein *et al.*⁵ identified pelvic pathology in 90% of 140 women with chronic pelvic pain. Similarly, Kresch *et al.*⁶ identified that 83% of 100 women with chronic pelvic pain had pathology; however, pathology was also found in 39% of 50 asymptomatic women, 12% of which represented non-constricting adhesions. However, in several other reports the identification of pelvic pathology has been identified in only 37%, 53%, or 60% of women with chronic pelvic pain.⁷⁻⁹

In this report, 13 experienced gynaecological surgeons were asked their opinions on the likelihood that adhesions would contribute to pelvic pain, based on location, extent, and severity. The likelihood of pain was thought to be a function of the sites involved; greatest likelihood of pain was associated with involvement of the ovaries, and least likelihood was associated with involvement of the anterior cul-de-sac. With regard to the type of adhesions, filmy adhesions were thought to be less likely to be associated with pain than dense, vascular or cohesive adhesions. Importantly, at each site evaluated, the likelihood of pain was directly related to the extent of involvement of the site. Thus, based on the impressions of the surgeons, any reduction of adhesions (> 5% of the site) would be expected to be associated with a reduction in the likelihood of pain, and the greater the reduction in adhesions the greater the likelihood there would be no pain.

The second question to be addressed is whether the location, extent, and severity of adhesions were significant enough for the physician to recommend

surgical intervention. Again, unfortunately, the existing literature does not provide a clear consensus.

A review of the literature indicates that adhesiolysis has been associated with pain reduction in situations where an organ is adhered to the anterior peritoneum.⁸ Additionally, in a series of women with pelvic pain treated by operative laparoscopy, four of 10 with chronic pain reported improvement, while 15 of 20 without chronic pelvic pain reported improvement.⁹ However, in a randomized clinical trial of surgery vs. observation for women with pelvic pain and pelvic adhesions, there was no significant difference in pain resolution between the two groups.¹⁰ It was noted though that a subgroup of women with dense, severe bowel adhesions did have a significant reduction in pain with surgery compared with the control women. In contrast, in our survey surgery was recommended overwhelmingly in patients complaining of pain, when any site was known to be over 30% involved with adhesions.

CONCLUSION

This study provides insight into the thought process which physicians may use in deciding if and when a patient should undergo surgery. While we clearly recognize that these opinions do not have 'scientific validation', undoubtedly these individual biases are important in clinical decision making and patient care, particularly in view of the current absence of adequate objective data. Importantly, the consistency of the opinions of the surgeons, despite the broad geographic areas represented, the diverse clinical training, and wide range of practice settings, suggests common clinical impressions for the treatment of women with pelvic pain. Objective future clinical trials are urgently needed to define in which women, and to what extent, adhesiolysis will benefit women with pelvic pain.

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