

Chronic pain following Caesarean section

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Background: Chronic postoperative pain is a well-recognized problem after various types of surgery such as amputation, thoracotomy, mastectomy, gallbladder surgery and inguinal hernia repair. However, little is known about chronic pain after gynaecologic surgery. Therefore, the aim was to study the incidence of chronic pain after Caesarean section.

Methods: A questionnaire was sent in February/March 2003 to 244 consecutive patients who underwent Caesarean section in a one-year period from 1 October 2001 to 30 September 2002. Patients were asked about duration of postoperative abdominal scar pain, and if pain was still present to describe the frequency and intensity of pain and its impact on daily life. The questionnaire also included questions about the Caesarean section and about pain problems elsewhere.

Results: A total of 220 patients (90.2%) answered the questionnaire. The mean follow-up time was 10.2 months (range 6–17.6). Postoperative pain resolved in most patients within 3 months but 27 patients (12.3%) still had pain at the time of

the interview. No patients had constant pain, but in 13 of 27 patients (5.9%) pain was present daily or almost daily. Patients with persistent pain ($n = 27$) had more often undergone general than spinal anaesthesia for the Caesarean section. Frequencies of pain problems elsewhere and recalls of severe acute postoperative pain were also higher among patients with persistent pain.

Conclusion: Chronic pain after Caesarean section seems to be a significant problem in at least 5.9% of patients.

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The incidence of chronic pain is known to be high after specific operations such as a limb amputation, thoracotomy and mastectomy (1, 2). A total of 60–80% of amputees experience phantom pain following amputation, whereas persistent stump pain is less frequent with a reported incidence of 5–10% (3–5). Long-term pain after thoracic surgery is seen in about half of the patients (6, 7) and a similar percentage may develop chronic pain after sternotomy (8–10) and breast surgery (11–13). Also, inguinal hernia repair and gall bladder surgery are followed by chronic pain and discomfort in 10–20% of patients (1, 2, 14–17).

An extensive literature search failed to provide any high-quality data on the incidence of chronic pain after gynaecologic surgery (18). To the authors' knowledge this is the first study to examine whether Caesarean section – a common surgical procedure – may be followed by chronic pain.

Materials and methods

All patients who underwent Caesarean section at our institution in a one-year period between 1 October 2001 and 30 September 2002 were included in the study. A questionnaire and a prestamped return envelope, with a reminder if there was no reply, were mailed to all patients in February/March 2003 (Appendix A). Thus, the time interval from operation to interview varied from 6 to 18 months. Patients were asked about duration of postoperative abdominal scar pain and, if they still had pain at present, they were asked to grade frequency and intensity of pain and its impact on daily activities. The questionnaire also included questions about previous abdominal operations, pain problems elsewhere, present weight and height and questions concerning the Caesarean section. Data concerning the surgical procedure (horizontal versus vertical incision) were derived from the

Table 1

Questions about pain after Caesarean section.

1. Did you experience much pain in the immediate postoperative period?
2. If you have no more pain, did the postoperative pain last for less than 1 month, 1–3 months, or more than 3 months?
3. If you still have pain in the operated area, please answer the following:
 - (a) How often is the pain present: constantly, daily, with day interval or week intervals
 - (b) What is the intensity of pain: (i) at rest and (ii) during physical activity: not present, mild, moderate, severe?
 - (c) Please state whether pain is a problem when carrying out the following activities: rising from a low chair, sitting down >30 min, standing up >30 min, walking on stairs, carrying heavy bags or the baby, driving, exercising – usual sports activity, working?
 - (d) Does the pain disturb your sleep?
 - (e) Does the pain have impact on your mood?
 - (f) Have you taken any medication or seen a doctor because of pain in the operated area within the last 3 months?
- (4) Do you have pain problems elsewhere (e.g. back pain, migraine)?
 - (a) If yes, please describe and indicate frequency: constantly, daily, with day interval or week intervals

medical record. Questions about pain are presented in Table 1.

Most of the Caesarean sections were carried out by consultants or senior residents. If a resident undertook the procedure, he or she was always supervised by a consultant. A Phannenstiell incision, 8–12 cm long, was made 2–4 cm above the symphysis pubis. The incision was extended through skin, subcutaneous fat and rectus sheath. The muscles were separated in the midline and finally also the peritoneum was divided. The transversely divided fascia and the skin were closed with absorbable sutures. Both peritoneal layers were left unsutured.

The results were analysed by the chi-squared test. Statistical significance was assumed at $P < 0.05$. Numbers are expressed as means and ranges. Confidence intervals (CI, 95%) are shown for the incidence of pain at 3 months and at the time of survey.

Results

A total of 245 Caesarean sections were performed during the one-year period. One patient had died since the time of surgery. Questionnaires were sent to the remaining 244 patients and a response was received from 220 (90.2%). Demographic data and information about surgery and anaesthesia are shown in Table 2.

The mean follow-up time was 10.2 months (range 6–17.6) for all 220 patients. Follow-up time was similar in the group of 27 patients with persistent pain (10.1 months (range 6.1–17.6)). As can be seen from Table 3, pain resolved in most patients within 3 months. However, duration of postoperative abdominal scar pain was more than 3 months in 41 patients (18.6%; CI: 13.5–24.6%) and at the time of the interview pain was still present in 27 patients (12.3%,

CI: 8.0–16.7%). No patients had constant pain, but 13 patients (5.9%) reported of pain daily or with days interval. Four of 13 patients with frequent pain described intensity of pain as moderate at rest; during physical activity pain was moderate in seven patients and severe in one patient.

Carrying heavy bags or the baby provoked pain in 21:27 of the pain patients. Seven patients (26%) had taken analgesics within the last 3 months and one (4%) had seen a doctor because of abdominal scar pain.

The questionnaire did not include specific questions about discomfort or scar sensibility but 21:193 patients without pain wrote as a free comment that, although they did not feel pain located to the scar, they still had some discomfort ($n=10$) and they felt that the sensitivity of their abdominal skin had changed after the Caesarean section ($n=11$).

There was no difference between patients with pain ($n=27$) and those without pain ($n=193$) when comparing the following: previous Caesarean section (40.7% vs. 31.4%); previous abdominal operations (22.2% vs. 16.1%); preoperative insertion of an epidural catheter (29.6% vs. 25.4%); acute operation (44.4% vs. 50.8%); vertical incision (11.1% vs. 6.7%); postoperative wound infection (14.8% vs. 8.8%); or BMI >25 at the time of interview (51.2% vs. 38.4%).

Table 2

Demographic data and information about surgery and anaesthesia ($n=220$).

Age (years, months)	30.2 (19.8–41.7)
Body Mass Index (BMI)	25.7 (17–47)
Previous abdominal operations	37 (16.8%)
Previous Caesarean section	71 (32.3%)
Preoperative epidural pain treatment	57 (25.9%)
Acute/planned procedure	110/110 (50%/50%)
Vertical/horizontal incision	16/204 (7.3%/92.7%)
General/spinal anaesthesia	43/177 (19.5%/80.5%)
Postoperative wound infection	21/199 (9.5%)

Values concerning age and BMI are given as means and ranges.

Table 3

Characteristics of pain after Caesarean section.	<i>n</i> = 220
Follow-up time in months (mean, range).	10.2 (6–17.6)
1. Recall of much pain in the immediate postoperative period:	103 (46.8%)
2. Duration of postoperative pain:	
<1 month	121 (55%)
1–3 months	58 (26.4%)
>3 months, but not present	14 (6.4%)
pain still present (mean 10.1 months postop)	27 (12.3%, CI: 8.0–16.7%)
3. Frequency of pain elsewhere:	
no pain	119 (54.1%)
constantly	8 (3.6%)
daily	13 (5.9%)
days interval	33 (15%)
weeks interval	47 (21.3%)
	<i>n</i> = 27
4. (a) Frequency of present chronic pain:	
constantly	0
daily	4
days interval	9
weeks interval	14
(b) Intensity of pain:	
(i) at rest: not present	13
mild	7
moderate	7
severe	0
ii) during physical activity: not present	2
mild	12
moderate	11
severe	2
(c) Impact on daily activities:	
Pain is a problem when:	
rising from a low chair	7
sitting down >30 min	6
standing up >30 min	7
walking on stairs	8
carrying heavy bags or the baby	21
driving	5
doing sports	10
working	5
(d) Disturbance of sleep	3
(e) Impact on mood	9
(f) Pain medication	7
(g) Contact with doctor	1

Patients with persistent pain had more often undergone general anaesthesia for the Caesarean section (10:27, 37% vs. 33:193, 17.1%, $P < 0.02$). Also, the occurrence of pain problems elsewhere (infrequent pain with weeks interval not included) was higher among patients with persistent pain than in patients without pain (17:27, 63% vs. 37:193, 19.2%, $P < 0.0001$). Moreover, patients with pain had a higher recall of severe postoperative pain (18:27, 66.7% vs. 85:193, 44%, $P < 0.04$).

Discussion

In this study of 220 patients we found that a surprisingly high proportion (18.6%) continued to have pain

more than 3 months after Caesarean section. Twenty-seven patients (12.3%) patients still had pain a mean observation time of 10.1 months after surgery and 5.9% reported daily or almost daily pain. There are no other studies available at present for comparison, but our findings are in line with other studies dealing with chronic pain after minor surgery (2). The frequency of chronic pain is much higher after major operations such as thoracotomy, mastectomy and amputation (1). The reason for this discrepancy is not fully known, although a likely explanation is that the latter type of surgery is more often associated with major nerve damage. For example, in amputation nerve damage is, for obvious reasons, always present. Experimental and clinical studies have clearly

shown that nerve injury implies a risk for development of neuropathic pain (19).

Other studies have suggested that the type of incision may be important for outcome. Luijendijk et al. (20) examined 243 patients who had a Pfannenstiel incision for various types of abdominal surgery and found that the length of the incision was a risk factor for signs of nerve entrapment. In a randomized, double-blind trial, Rafique et al. (21) compared the effect of closure with non-closure of both visceral and parietal peritoneum on postoperative pain following Caesarean section. Non-closure significantly reduced postoperative pain. The surgical method used in the present study was the same for almost all patients. Both peritoneal layers were left unsutured and the vast majority of patients had a Pfannenstiel incision. Only patients with a pre-existing vertical scar had a vertical incision. Although, we found no relation between type of incision and persistent pain, due to the limited number of patients with a vertical incision we can not exclude that examination of a larger number of patients would have revealed a difference.

In our study, the frequency of pain was higher in patients who underwent general anaesthesia than in patients operated under spinal anaesthesia. The reason for this difference is not known. It may be speculated that noxious input to the central nervous system is less during spinal anaesthesia than during general anaesthesia. Experimental and some clinical studies have shown that an afferent barrage of noxious input can generate a central sensitization in second order noxious responding neurons and that such central sensitization may be associated with an increased risk of persistent pain. If the noxious input is insufficiently blocked by the anaesthetic and analgesic agents, then this may result in central sensitization (22). The higher frequency of persistent pain in patients who underwent general anaesthesia may in part also be explained by the fact that general anaesthesia is mostly used for very urgent cases, perhaps leaving the patient with a traumatic memory of the Caesarean section.

We found that patients with persistent pain had a higher recall of severe postoperative pain. Intensity of postoperative pain and consumption of analgesics were not registered in our study and we therefore do not know if patients with persistent pain indeed suffered from more severe postoperative pain. The link between postoperative pain and chronic pain has been confirmed by others (6, 13, 14, 23), but does not necessarily implicate causality. Also, retrospective reports about pain should be interpreted with care. Tasmuth et al. (24) found that patients with chronic

pain after breast surgery tended to overestimate postoperative pain.

Patients with persistent pain were significantly more likely to have pain problems elsewhere. This finding may have several explanations. Recent research has suggested that some individuals may have a genetic susceptibility to develop chronic pain conditions (25). Psychosocial factors are also likely to be involved in the development of chronic pain, including pain after surgery. Bisgaard et al. (26) showed that preoperative neurotism was a risk factor for early postoperative pain.

In conclusion, this study shows that chronic pain may be a significant clinical problem after Caesarean section. The observation period in the present study is relatively short and we can not exclude that pain will eventually resolve in some of the patients. Other studies on chronic pain following surgery suggest that the incidence of pain may remain the same but both severity and duration of pain attacks may diminish with time (4). Future prospective studies with a longer observation period should include pre- and postoperative assessments of pain and careful examination of the scar, including psychophysical measurements, in order to achieve more knowledge about factors responsible for chronic pain after surgery.

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Appendix A. Questionnaire translated into English

- (1) Did you have an epidural catheter to treat labor pain?
 Yes
 No
 Do not know
- (2) What type of Caesarean section did you have?
 Emergency
 Planned
 Do not know
- (3) Did you have general anaesthesia or spinal anaesthesia for the Caesarean section?
 General
 Spinal
 Do not know
- (4) Did you experience much pain in the immediate postoperative period?
 Yes
 No
 Do not know
- (5) Did you experience infection in the wound?
 Yes
 No
 Do not know
- (6) Have you had a Caesarean section previously?
 Yes
 No
- (7) Have you ever had any other abdominal operations?
 Yes
 No
 If yes, please specify:
- (9) What is your present weight and height?
 Weight:
 Height:
- (10) What was the duration of postoperative abdominal wound pain?
 Less than 1 month
 1–3 months
 More than 3 months
 Pain is still present
 If you still have pain located to the scar, please proceed with questions 11–19.
 If you have no more pain, only answer the last two questions (18, 19) in the questionnaire.
- (11) How often is the pain present?
 Constantly
 Daily
 With days interval
 With weeks interval
- (12) What is the intensity of pain?
 At rest:
 Not present
 Mild
 Moderate
 Severe
 During physical activity:

Not present
Mild
Moderate
Severe

(13) Please state whether pain is a problem when carrying out the following activities:

Rising from a low chair?

Yes

No

Sitting down >30 min?

Yes

No

Standing up >30 min?

Yes

No

Walking on stairs?

Yes

No

Carrying heavy bags or the baby?

Yes

No

Driving?

Yes

No

Do not drive

Doing sports?

Yes

No

Do not do sports

Working?

Yes

No

Do not work

(14) Does the pain disturb your sleep?

Yes

No

(15) Does the pain have impact on your mood?

Yes

No

(16) Have you taken any medication because of pain in the operated area within the last 3 months?

Yes

No

If yes, please specify:

(17) Have you seen a doctor because of pain in the operated area within the last 3 months?

Yes

No

(18) Do you have pain problems elsewhere, e.g. back pain, migraine?

If yes, please specify:

(19) How often is the pain present?

Constantly

Daily

With days interval

With weeks interval