

## EXPERTS' OPINION

## Postpartum chronic pain

Patricia LAVAND'HOMME \*

Department of Anesthesiology, Medical School, St. Luc Hospital, Catholic University of Louvain, Brussels, Belgium

\*Corresponding author: Patricia Lavand'homme, Department of Anesthesiology, Medical School, St. Luc Hospital, Catholic University of Louvain, Av Hippocrate 10-UCL 1821, 1200 Brussels, Belgium. E-mail: [patricia.lavandhomme@uclouvain.be](mailto:patricia.lavandhomme@uclouvain.be)

## ABSTRACT

Postpartum chronic pain is a clinical reality which affects 6.1% to 11.5% of women after delivery and affects their recovery. The large range of incidence observed in the literature relies on criteria used to define chronic postpartum pain. The features depend on the type of delivery. Cesarean delivery which rate is increasing worldwide seems currently associated with lower risk of chronic postpartum pain, specifically chronic pelvic pain. Further chronic scar pain which often involves a neuropathic component is often of mild intensity. In opposite, after vaginal delivery, chronic pelvic pain and perineal pain have an important negative impact on women's mood and quality of life. As for any chronic pain, individual risk factors account more than degree of tissue trauma. From actual reports in the field, better pain education of both women and health care providers might help to reduce the problem.

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Childbirth is a major event in life, associated with both physical and psychological changes which may affect the woman quality of life. Although childbirth may be considered as a natural process, some deliveries necessitate instrumentation and/or surgical intervention and the possibility of persistent pain secondary to the physical trauma of delivery should not be ignored. A growing recognition of the burden of chronic postsurgical pain (CPSP) has risen. Its emerging importance has been supported by CPSP inclusion in the upcoming version of the International Classification of Diseases (ICD-11) under the joint efforts of IASP (International Association for the Study of Pain) and WHO (World Health Organization).<sup>1</sup> CPSP interferes rehabilitation in a time when Enhanced Recovery After Surgery (ERAS) programs are promoted including after delivery.<sup>2</sup> CPSP is often associated to chronic use of analgesics like opioids and there is currently a growing concern about persistent opioid use af-

ter not only major but also minor surgical procedures including cesarean deliveries.<sup>3</sup> Also, as the initial event is obvious, CPSP prevention is now considered an indicator of the quality of health cares. The awareness about long term maternal physical and emotional health problems (two major contributors to chronic pain) after childbirth is increasing since the first 2004 report of CPSP after caesarean section,<sup>4</sup> with recent study including a 5-years follow-up.<sup>5</sup> The present review about postpartum chronic pain is aimed to summarize current knowledge in the field.

### Postpartum chronic pain: did the prevalence change over time?

In 1998, Crombie<sup>6</sup> underlined that 22.5% of the patients attending Pain Clinics attributed their pain to a previous surgery. Since then, numerous studies have been published which results can be summarized as following: "CPSP occurs in one or

two of 10 surgical patients and becomes an intolerable pain condition after one of every 100 operations,”<sup>7</sup> an incidence which has not changed over time.<sup>8</sup> Any surgical procedure and tissue trauma can cause long-lasting pain. The large range of CPSP incidence observed in the literature relies on surgical techniques, patients population and criteria used to define CPSP. The use of a common updated definition should help to reduce divergences in CPSP incidence.<sup>1</sup> A retrospective study found 6.1% of women with significant pain related to delivery at 2.3 year.<sup>9</sup> A recent systematic review (15 studies including 4475 patients) about “wound CPSP” after cesarean section (CS) revealed a clinically relevant and stable incidence since 2002 estimated at 15.4% at three months and at 11.5% at six months and later.<sup>10</sup> Among patients with CPSP after CS, 9.6% (95% CI: 0.0 to 21.0%) had severe pain. According to this report, chronic postpartum pain after CS represents a significant human and socio-economic problem. However, as already pointed out, a puzzling feature of CPSP relates to the CPSP incidence found in studies compared to the number of patients seen in pain clinics. In his first report, Crombie mentioned abdominal and perineal surgeries as major causes of pain in respectively 47% and 38% of patients attending the Pain Clinics although no mention was made to the type of procedure. Today, findings from the recently developed “*transitional pain services*” or “*extended acute pain services*” mention thoracic and orthopedic surgeries as being the most common procedures associated to CPSP.<sup>11</sup> Whether there is no doubt about the existence of chronic pain after delivery, the aforementioned observations point out the fact that women are reluctant to report pain in the context of childbirth considered as a happy event in life, a fact already noticed.<sup>4, 12</sup> Further, some publications suggest that when women consult specialists in urology or pain medicine because of severe perineal pain, the interval between birth and the consultation is often long: mean interval from genital tract trauma (*i.e.* childbirth or other surgery) to consultation for pain is eight months, range three months to 20 years.<sup>13, 14</sup> That observations underline some educational problem about questioning and reporting postpartum pain in both health care providers and patients.

### Postpartum chronic pain: any difference according to the type of delivery?

Chronic postpartum pain has been more often assessed after cesarean than vaginal delivery. CS is one of, if not, the most common surgical procedure performed over the world as estimated number was 22.9 millions in 2012.<sup>15</sup> In CPSP related to CS, scar pain predominates and very often presents with neuropathic character.<sup>16</sup> The Pfannenstiel incision commonly used for caesarean delivery carries a high risk of nerve entrapment. A neuropathic component was found in 24.5% of the patients with chronic scar pain using the Douleur Neuropathic 4 (DN4) tool.<sup>17</sup> However, the neuropathic aspect of CPSP after CS is less stable than that after other surgeries and its intensity is generally low (pain score >3/10 in only 2% of the patients)<sup>18</sup> what is surprising because neuropathic CPSP is usually associated to severe pain and poor quality of life. Deep visceral pain *i.e.* new onset of chronic pelvic pain (incidence range from 2.9% to 11%) also may occur which strongly decreases the women’s quality of life.<sup>10, 12, 19</sup> Finally, it is interesting to note that women who had CS are more likely to report low back pain (8.5-26.5% at 1 year)<sup>10</sup> than women who had a vaginal delivery (adjusted odd ratio 1.40; 95% CI: 1.05-1.85).<sup>20</sup>

Studies assessing chronic pain after vaginal delivery report 2% to 10% of women with pain at six months and later, almost exclusively in mothers who had an assisted vaginal birth.<sup>12, 21</sup> It is here worth noting that chronic postpartum pain intensity is usually higher when it is related to vaginal delivery than to caesarean delivery and more severely affects the woman’s quality of life and mood.<sup>9, 22</sup> The nature of persistent pain after vaginal delivery is poorly characterized: perineal area and buttocks are often mentioned as well as the presence of deep abdominal and pelvic pain.<sup>22</sup> Some 27.6% of women present late dyspareunia defined as pain during intercourse at one year after childbirth.<sup>23</sup> No relation is found between late postpartum dyspareunia and the mode of delivery *i.e.* spontaneous *versus* instrumental, episiotomy or lacerations.

Because the rate of caesarean delivery is currently increasing in developed countries for several reasons like maternal age and comor-

bidities, the impact of the mode of delivery on later woman's global health and quality of life deserves attention. An old study reported similar outcomes at two years after either planned vaginal or planned caesarean delivery.<sup>21</sup> Recent studies found caesarean delivery associated with a reduced risk of chronic pain (odds ratio: 0.12),<sup>9</sup> specifically a reduced risk of chronic pelvic pain by comparison with vaginal delivery (odds ratio: 0.48 and 0.65, for elective and emergency caesarean delivery, respectively).<sup>19</sup> Emergency *versus* elective caesarean delivery does not affect the risk of 1-year chronic postpartum pain.<sup>24</sup> However, the global health-related quality of life at five years after birth of a first child was lower in women who have undergone emergency CS than women who had vaginal delivery (instrumental or not) or CS on request.<sup>5</sup> Further, emergency CS tends to increase the intensity of chronic pelvic pain.<sup>19</sup> Finally, it is interesting to note that whether history of CS is not increasing the risk of CPSP after a second caesarean delivery,<sup>24</sup> it represents a significant risk factor for the development of CPSP after hysterectomy performed later in life.<sup>25</sup>

### Postpartum chronic pain: risk factors and preventive strategies

The degree of tissue trauma is a risk factor for the severity of acute postpartum pain but does not seem to account for the risk to develop severe chronic pain after delivery.<sup>22</sup> That means that factors involved in the development of chronic pain after tissue trauma are "individual-related" and rely on both exaggerated reaction to tissue trauma and failed neuroadaptation in different pain dimensions.<sup>8</sup> From a clinical point of view, in risk stratification for the development of CPSP,<sup>26</sup> "pain predicts pain" *i.e.* some individuals may be predisposed to severe and persistent pain. Both preoperative pain at surgical site or elsewhere (*e.g.* fibromyalgia, low back pain, chronic headaches...) and acute postoperative pain severity are strong predictors of CPSP.<sup>26</sup>

A history of pain is a significant risk factor for CPSP after delivery, both in retrospective studies<sup>4</sup> and prospective ones. Predelivery history of pain was the only factor associated with increased chronic pelvic pain.<sup>19</sup> Also, previous history of a

peripheral neuropathic event was a significant risk factor for neuropathic CPSP after CS.<sup>17</sup>

Acute postoperative pain intensity as well as the time spent in severe postoperative pain is a risk factor for CPSP.<sup>27</sup> After childbirth, acute postpartum pain severity, independent of the type of delivery, predicted an 3.0-fold increased risk of postpartum depression and an 2.5-fold increased risk of persistent pain at two months.<sup>22, 28</sup> In a recent systematic review assessing the association between acute and chronic pain after surgery, movement-evoked acute pain emerged as a predictor of CPSP intensity.<sup>29</sup> Despite no CS study was included in that systematic review, two recent prospective studies report higher pain intensity on movement within 24 h post-CS as a risk factor for CPSP up to six months after delivery.<sup>30, 31</sup> Similar findings (*i.e.* recalled pain) emerged from previous retrospective studies.<sup>4</sup> Acute postpartum pain treatment remains too often suboptimal despite the development of Enhanced Recovery programs where pain control plays a major role in recovery.<sup>2</sup> A multicenter study in 2008 found 10.9% of women with severe pain within 24h after CS.<sup>28</sup> In 2015, similar observations were reported.<sup>32</sup> Although not considered as a major procedure, CS ranked ninth for pain severity among 179 different surgical procedures.<sup>33</sup> Further, worst pain intensity and pain at mobilization were significantly higher after CS compared with three different types of hysterectomy.<sup>32</sup> These aforementioned findings question the quality of postoperative pain management in obstetric population. Here also, there is clearly a need for education of both patients and health care providers.

The subacute period of recovery has emerged as a "key period" for the chronification of postoperative/trauma pain because of the increased involvement of psycho-social factors, including the "psychological burden" of pain in some patients.<sup>8</sup> Today, a paradigm shift from intensity-focused pain measurement to patient functional recovery-assessment has risen. It is mandatory to better understand the interference of pain with functional recovery, particularly in obstetric population where women want to recover faster. Two recent publications have focused on the question. In one study, vaginal delivery and CS populations expressed similar pain scores while show-

ing clinically significant differences in other measures of physical recovery.<sup>34</sup> CS patients scored significantly less in the domains related to physical comfort and physical independence. Another study assessed the course of pain resolution and functional recovery in healthy primiparas.<sup>35</sup> Beyond a substantial interpatient variability, recovery to predelivery function was similar after vaginal and cesarean delivery. However, pain burden strongly correlated with the time of functional recovery and was 1.7 times greater after cesarean delivery due to both higher pain intensity and longer pain duration.<sup>35</sup> Such study argues for a close patient's follow-up after hospital discharge.

Finally, the impact of peri-partum pain management, *i.e.* anesthesia and analgesic techniques, on postpartum chronic pain has been debated, particularly in the context of CS. To date, nor labor pain management (epidural analgesia, intravenous remifentanyl) nor the type of anesthesia used for CS seemed to affect the development of chronic postpartum pain.<sup>9, 24</sup> However, a recent Cochrane Review (four studies including 601 patients) found that the use of effective postoperative regional analgesic technique (intra-wound infiltration, parietal block) was susceptible to reduce CPSP after CS (odds ratio 0.46; 95% CI: 0.26-0.78)<sup>36</sup> (Table I).<sup>9, 10, 12, 17, 19-22</sup>

### Conclusions

Postpartum chronic pain is a clinical reality which features depend on the type of delivery. Chronic pelvic pain and perineal pain have higher nega-

TABLE I.—Prevalence of postpartum chronic pain conditions (at six months and later) and associated health problems.<sup>9, 10, 12, 17, 19-22</sup>

	Cesarean delivery	Vaginal delivery
Chronic postpartum pain	6.1-11.5%	
Scar pain (with neuropathic component)	8.1-15.0% (24.5-50%)	---
Perineal pain	---	6.3% (2.0-10.0%)
Chronic pelvic pain (new onset)	1.3-2.9%	4.5-6.9%
Low back pain	28% (13.7-63.4%)	
Extreme tiredness	57.1-64.8%	
Mood affected by pain	17-36%	
Depressive symptoms	5.6-17.6%	
Analgesics intake	43-73%	

tive impact on women mood and quality of life. As for any chronic pain, individual risk factors account more than degree of tissue trauma. From actual reports in the field, better pain education of both women and health care providers might help to reduce the problem.

### Key messages

- Postpartum chronic pain is a clinical reality which affects 6.1% to 11.5% of women after delivery. The incidence has remained stable over time.
- The features of chronic postpartum pain depends on the type of delivery. Cesarean delivery is associated with scar pain which often involves a neuropathic component generally of mild intensity. Cesarean delivery is also associated to a lower risk of chronic pain, specifically chronic pelvic pain, than vaginal delivery.
- Chronic pain after vaginal delivery include chronic pelvic pain and/or perineal pain. When present, pain is often severe and affects woman's mood and quality of life.
- Individual-related factors, more than degree of tissue trauma, are involved in the development of chronic postpartum pain: predelivery history of pain and higher pain intensity particularly on movement within 24 h postdelivery stand as important risk factors.
- Peripartum pain control is important to prevent chronic pain after delivery. Effective postoperative regional analgesic techniques (intra-wound infiltration, parietal block) might reduce chronic pain after cesarean section.
- It is worth noting that women are still reluctant to report pain in the context of childbirth and this underlines a need for more education of both women and health care providers.

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