Presence of the partner in the operating room during emergency caesarean section

A scoping review

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BACKGROUND Emergency caesarean sections are often very urgent, with limited time for informing and guiding parents. Is it preferable to leave the partner outside of the operating room, or let the partner accompany the mother?

OBJECTIVE This review aimed to provide an overview of the available evidence regarding the presence of the partner in the operating room during emergency caesarean sections.

DESIGN Scoping review.

DATA SOURCES A systematic literature search was performed in PubMed, Embase, Cinahl and the Cochrane Library.

ELIGIBILITY CRITERIA All published literature reporting on emergency caesarean sections in regional or general anaesthesia with the partner present in the operating room were eligible, no matter the design.

RESULTS Twenty-four titles, published between 1984 and 2020, were included; 15 contained original clinical findings and 9 were letters/debates. Quality of evidence was assessed using the Mixed Methods Appraisal Tool and found to be very low/low (17 studies), moderate (6) or good (1). Studies originated from Europe (16 studies), USA/Canada (4), South America (2), Asia (1) and Africa (1). Content data were thematically summarised and were overall either in favour or against having the partner present. Staff seemed reluctant to let partners be present for caesarean sections under general anaesthesia; mothers and partners preferred the partners’ presence. Under regional anaesthesia, parents also wished for the partners’ presence and described the caesarean section under regional anaesthesia as a predominantly positive experience. Most staff had a favourable attitude towards letting the partner be present for caesarean sections under regional anaesthesia.

CONCLUSION Limited evidence exists regarding the presence of the partner during emergency caesarean sections, but is of low quality. Most parents prefer having their partner present. Staff can be reluctant, especially when general anaesthesia is used.

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KEY POINTS

- Limited evidence exists regarding the presence of the partner in the operating room during emergency caesarean sections.
- Most parents prefer having the partner present in the operating room during emergency caesarean sections under either general or regional anaesthesia.
- Most arguments in the literature against having the partner present in the operating room are personal opinions.
- Most arguments in the literature in favour of having the partner present in the operating room are clinical findings.
- Healthcare staff are reluctant to allow partners to be present when general anaesthesia is used.
Introduction

Having a partner present to support the mother during labour and vaginal birth is a well-established practice in most countries worldwide\(^1\) and has well-documented benefits.\(^2\)–\(^5\) In many countries, this is also the practice with elective caesarean sections.\(^6\) However, when it comes to emergency caesarean section, the picture is less clear. Emergency caesarean section is not how parents plan to start their life as a family, and it can be very stressful for the mother and partner. Studies find increased rates of post-traumatic stress disorder,\(^7\)–\(^9\) anxiety and depression following emergency caesarean section in mothers\(^10\)–\(^14\) and partners/fathers.\(^15\)

An emergency caesarean section is one of the most urgent medical emergencies, requiring immediate action, involving several healthcare professionals in an operating room (obstetricians, anaesthetists, midwives, etc.). Often, there is very limited time to inform the parents about what is going to happen, and they may be stressed, experiencing pain and in fear for the life of mother and infant. In this highly complex situation, is it preferable to leave the partner outside of the operating room, or is it better to let the partner accompany the mother during the emergency caesarean section?

The perceived benefits of letting the partner participate in the emergency caesarean section include improved psychological support for the mother, improved psychological coping for the partner as well as an increased possibility for early skin-to-skin contact, which could also be initiated between infant and partner, if the mother is temporarily incapacitated. On the other hand, concerns include that the partner witnessing an emergency caesarean section could increase stress for the partner and perhaps also the mother, or that the partner would behave inappropriately and thus compromise sterility or remove important attention from the mother or infant.

With this scoping review, we aim to provide an overview of the current body of evidence and opinions in the literature regarding the presence of the partner in the operating room during emergency caesarean sections.

The primary outcome of the review is: what is known about having the partner present during emergency caesarean section with general anaesthesia? Effects on the mother, the partner and the healthcare staff, in terms of experiences, thoughts and opinions, as well as effects on medical outcomes (regarding mother and infant).

The secondary outcome of the review is: what is known about having the partner present during emergency caesarean section with regional anaesthesia (epidural or spinal)? Effects on the mother, the partner and the healthcare staff, in terms of experiences, thoughts and opinions, as well as effects on medical outcomes (regarding mother and infant).

Material and methods

This scoping review was planned and reported in accordance with the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocol (PRISMA-P) and PRISMA Extension for Scoping Reviews (PRISMA-ScR) guidelines.\(^16\),\(^17\) Please see the protocol at https://osf.io/jqwx8/ (1 October 2021). The design of the literature search strategy was based on the inclusion criteria, which were categorised according to the PCC-model (Population, Concept and Context), which is a less restrictive alternative to the PICO-model (Population, Intervention, Comparator and Outcome) recommended for systematic reviews.\(^18\)

**Population:** this review included studies reporting on the experiences, thoughts and opinions of mothers, partners and healthcare professionals involved in emergency caesarean sections, or clinical outcomes related to the emergency caesarean sections.

**Concept:** this review includes studies reporting on having the partner present in the operating room.

**Context:** this review includes studies reporting on mothers receiving either general or regional anaesthesia for their emergency caesarean sections.

We performed a preliminary search of PubMed, Cinahl, Embase and the Cochrane Library to avoid evidence duplication but found no current or ongoing reviews concerning the presence of the partner during emergency caesarean sections.

All study designs were eligible, including not only quantitative and qualitative designs, but also, for example, letters, debate posts and so forth. Manuscripts published in English, German, Norwegian, Swedish and Danish were included.

PubMed, Embase, the Cochrane Library and Cinahl were searched, from inception to the present day (October 2021). We performed an initial limited search of PubMed and Embase to identify relevant articles. The words used in the titles and abstracts and the index terms from these articles were then used to develop a full search strategy (please see details in Table A, Supplemental Digital Content, http://links.lww.com/EJA/A772). Our search strategy aimed to locate both published and unpublished studies. The reference lists of included studies were also screened for additional relevant publications. Unpublished studies and grey literature were searched in Google Scholar.

Following the literature search, all identified studies were uploaded to EndNote20, and duplicates removed. Then studies were uploaded to the Covidence software, and duplicates were removed once more. Titles and abstracts were screened by two independent authors (HKN and TB) for relevance according to the inclusion criteria. Potentially relevant studies were retrieved and assessed in detail (Fig. 1).

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Each included manuscript was evaluated for quality of evidence, using the Mixed Methods Appraisal Tool (MMAT) developed by the Joanna Briggs Institute, by three authors (HKN, TB and ACB), resulting in an overall judgement of quality as very low, low, moderate or high. If content was unclear or if relevant data were missing, authors were contacted to obtain the information.

In order to thematically summarise data from the included studies, an inductive approach was used. Data from the studies were extracted as verbatim quotes, or in our English translation concerning studies published in other languages (German and Norwegian), by two authors (HKN and TB) using a data extraction form. These data were read and re-read several times to identify thematic similarities and patterns. Emerging patterns were organised in thematic groups. Two authors (HKN and ACB) discussed the data and emerging themes and agreed upon the final thematic groupings of the results.

Results

We identified 24 relevant titles from the literature search, including citation searching (Fig. 1). The titles covered one nonsystematic review, five quantitative studies, seven qualitative studies, four letters/brief descriptions of single cases, and three conference abstracts (Table 1). Geographically, studies originated from the UK, USA, Germany, Brazil, South Africa, Japan, Sweden, Norway, Finland, Spain and Canada. The studies were published between 1984 and 2020. Table 1 provides an overview of the studies included regarding design, participants, type of anaesthesia, whether the partner was present and a brief summary of results and authors’ conclusions.

The quality of evidence was assessed for all titles (Table 2 and Table C, Supplemental Digital Content, http://links.lww.com/EJA/A774). Debate posts and letters/brief descriptions of single cases were rated as having very low quality of evidence. The MMAT tool was used to evaluate all manuscripts containing original clinical data. We tried to contact several authors to obtain more information and data, but this was unsuccessful (see Table D, Supplemental Digital Content, http://links.lww.com/EJA/A775).

Content data were extracted from the studies according to the outcomes and thematically summarised. Overall, contents were divided into either ‘pro’ or ‘con’ as regards having the partner present during emergency caesarean section (Table 3).

Concerning the ‘con’ side, we identified eight themes: the operating room (OR) is only for surgery; the OR is an unpleasant environment; a wish to protect the integrity of the mother; a caesarean section is not a normal birth; a fear that the partner will distract the staff and disturb their concentration on the job in hand; mother under general anaesthesia is not ‘present’; medico-legal complaints; emotional trauma for the partner.
Table 1 Characteristics of included titles

| First author, year, country | Type | Design | Regional or general anaesthesia | Number of participants | Partner present? | Time to follow-up | Results and conclusion |
|-----------------------------|------|--------|---------------------------------|------------------------|-----------------|------------------|-----------------------|
| Cain, 1984, USA             | Journal article | Cohort, retrospective questionnaire and follow-up observations in own home | Regional or general anaesthesia | 19 under regional, 4 under general anaesthesia | 23 volunteer couples | 4 elective CS, 19 emergency. Not possible to exclude data on the four elective CS. 13 fathers present, 9 wished to be, but were not allowed, 1 declined. | 3 months after CS | Mothers and fathers described positive feelings about having the father present during CS, and negative feeling about the fathers’ absence. Mothers and fathers had easier and closer contact with their infant if the father was present related more positive circumstances in the hospitalisation period following surgery. At 3 months, there was no difference in parent–infant interaction except that fathers who were not present showed a little greater intensity of positive affect to their infants. Findings are described in detail in Table 5 (secondary outcome, regional anaesthesia) and some are mentioned in Table 3 (themes). |
| Leach, 1984, Canada         | Journal article | Review, not systematic | Regional anaesthesia | NA | NA | NA | Mothers and fathers were positive about being present for CSRA, also in cases where resuscitation efforts were required. Complications and procedure time was alike between groups. Findings are described in detail in Table 5 (secondary outcome, regional anaesthesia) and some are mentioned in Table 3 (themes) |
| Svensen, 1985, Norway (Norwegian) | Journal article | Retrospective cohort (defined in 1984, CS carried out in 1981–1983) | Regional (epidural), and general anaesthesia | 100 consecutive CS after changing routines, so epidural anaesthesia was possible, and the partner was allowed in the OR | 54 CSRA, 17 of these with partners present (7 more were asked but declined; 4 wanted to be present but were not allowed); 46 CSGA | Perioperative and immediate postoperative period | Mothers and fathers described positive feelings about having the father present during CS, and negative feeling about the fathers’ absence. Mothers and fathers had easier and closer contact with their infant if the father was present related more positive circumstances in the hospitalisation period following surgery. At 3 months, there was no difference in parent–infant interaction except that fathers who were not present showed a little greater intensity of positive affect to their infants. Findings are described in detail in Table 5 (secondary outcome, regional anaesthesia) and some are mentioned in Table 3 (themes). |
| Sakala, 1988, USA           | Journal article | Retrospective cohort | General and regional anaesthesia | 227 mothers having CS, elective and emergency, in a 10-month period in a single center | 148 mothers with father present (53% emergency CS); 79 without father present (63% emergency CS) | NA | Regional anaesthesia was more likely to be used with father present. Clinical differences between groups (in favour of having the father present) disappeared when controlling for anaesthesia form (favouring regional anaesthesia), except higher Apgar at 5 min with father present. Findings are described in detail in Table 4 (primary outcome, general anaesthesia), Table 5 (secondary outcome, regional anaesthesia) and some are mentioned in Table 3 (themes) |
| Freeman, 1989, UK          | Letter, description of a case | General | One couple having emergency CS | Parents insisted that the father was present during CS. CS uneventful | NA | Large debate among anesthesiologists following the CS. A policy is being formed. Asking for inputs from others. |
| Russell, 1989, UK          | Letter, response to Freeman 1989 | General anaesthesia | One couple | Father wished to remain in the OR and did so. CS uneventful. | NA | In favour of having the father present in the OR, both during induction of anaesthesia and during the CS, in either regional or general anaesthesia. More details can be found in Table B, Supplementary Digital Content, http://links.lww.com/EJA/A773. |
| Gadolarm, 1989, UK         | Letter, response to Freeman 1989 | Not stated | One couple | Father forced his way into the OR and was present during CS. | NA | Describing a case of a threatening and abusive father forcing his way into the OR. Stating the partners should only be allowed in the OR at the discretion of the staff. Asking for round-the-clock hospital security staff. More details can be found in Table B, Supplementary Digital Content, http://links.lww.com/EJA/A773. |
| First author, year, country | Type | Design | Regional or general anaesthesia | Number of participants | Partner present? | Time to follow-up | Results and conclusion |
|-----------------------------|------|--------|--------------------------------|------------------------|------------------|------------------|-----------------------|
| Bogod,38 1990, UK | Letter, opinion | NA | General | NA | NA | NA | Describing a change in his own preferences; now willing to allow the father to be present for CSRA, if he enters after the induction of anaesthesia, to witness the birth, and then leave with the baby and midwife. |
| Ceronio,27 1995, South Africa | Journal article | Qualitative; first unstructured, then semi-structured interview and questionnaire | Regional (epidural) | Five mothers, five fathers, first time parents | Yes | Three days and 6 weeks after CS | Some mothers mentioned having the father present during CSRA as supportive. Fathers experienced stress and disappointment; found it easier to accept the CS when they understood the reasons for the procedures; did not feel excluded; felt covered into the CS situation without feeling prepared; did not feel in control; found the OR disturbing; found support from healthcare staff to be very important. Findings are described in detail in Table 5 (secondary outcome, regional anaesthesia) and some are mentioned in Table 3 (themes). |
| Paravicini,38 1996, Deutschland (German) | Debate | NA | Regional and general | NA | Argues against having a partner present | NA | States that CS are not natural births and should not be handled as such. Having the partner present might distract the staff and disturb their concentration, and may also set a precedent for other types of surgery in the future. The father could faint or contaminate the field and should not be present. |
| German Society for Anesthesiology and Intensive Care Medicine,39 1999, Deutschland (German) | Statement from a medical society | NA | Regional and general | NA | NA | NA | The responsible doctor can allow a relative to be present but is not obliged to do so. In elective CS, most often under regional anaesthesia, a partner will often be allowed. In emergency CS under general anaesthesia, a partner will not be allowed in. If the mother wishes for her partner to be present during CS, and the partner consents, he should fill out a consent form beforehand (an example is described in the document). |
| Robinson,40 2004, UK | Debate, pro | NA | General | NA | Opinion; in favour of having partners present | NA | Partners should be allowed in the OR during CS. Mothers wish for it and it calms her; within paediatric anaesthesia relatives are often present; difficult intubations are rare. A member of staff should support the partner. |
| Smiley,41 2004, USA | Debate, con | NA | General | NA | Opinion; against having partners present | NA | Partners should not be allowed in the OR during CS. Benefits have not been documented; when the mother is under general anaesthesia, there is no reason the partner should be there; the mother would not want her husband to see her like that; the partner risks emotional trauma; staff risk legal issues; staff will perform less well; the partner might distract the staff and disturb their concentration, the partner might faint. |
| | | | | | | | | |
| First author, year, country | Type | Design | Regional or general anaesthesia | Number of participants | Partner present? | Time to follow-up | Results and conclusion |
|-----------------------------|------|--------|---------------------------------|------------------------|-----------------|------------------|------------------------|
| Tarkka et al., 2005, Finland | Abstract (journal article in Finnish, abstract available in English) | Retrospective cohort, questionnaire | Primarily regional (epidural and spinal) | 213 mothers, of whom 106 had emergency CS | 83% had a support person present (most often the spouse) | Not stated | Mothers' birth experiences were fairly positive and the presence of the support person during the birth was associated with mothers' positive birth experience. Findings are described in more detail in Table 3 (themes). |
| Savage, 2007, UK | Journal article | Questionnaire survey | Regional and general | All (231) clinical directors in obstetrics and gynecology in the British Isles were sent a questionnaire, 68% (151) responded. | Opinions on having the partner present during CS | NA | All consultants allowed some partners to attend, primarily when it came to CSRA; one commented “some colleagues have reservations if the caesarean is under general anaesthetic”. Two said that partners were not invited to emergency caesareans. Findings are described in more detail in Table 5 (secondary outcome, regional anaesthesia) and some are mentioned in Table 3 (themes). |
| McIlmoyle et al., 2010, UK | Conference abstract | Questionnaire survey | Regional and general | 81 staff members (36 midwives, 25 anaesthetic staff, 1 auxiliary nurse, 19 obstetric staff) | Opinions on having the partner present | NA | A third of the anaesthetic staff agreed that having the partner present during CSGA is acceptable; others were open to considering it under the right circumstances. Obstetricians are becoming similarly open; however, other members of staff, in particular midwives, are opposed to partners' presence during general anaesthesia. Findings are described in detail in Table 4 (primary outcome, general anaesthesia), Table 5 (secondary outcome, regional anaesthesia) and some are mentioned in Table 3 (themes). |
| McIlmoyle et al., 2012, UK | Conference abstract | Questionnaire survey | Regional and general | 56 mothers, 53 partners (33 elective, 23 emergency CS and data cannot be separated) | Not stated | After CS | The vast majority of mothers and partners stated that it was important for the partner to be present during CSRA and CSGA. Findings are described in detail in Table 4 (primary outcome, general anaesthesia), Table 5 (secondary outcome, regional anaesthesia) and some are mentioned in Table 3 (themes). |
| Lindberg, 2013, Sweden | Journal article | Qualitative | Not stated | Eight fathers having experienced their partners' complicated childbirth/Cs that involved a postoperative stay at an ICU | Some present, some not (numbers not stated) | 1, 5 to 3 months after CS | Fathers who were not present for CS expressed fear, frustration, helplessness, feeling abandoned, excluded and described the waiting time as very trying. Fathers present during CS expressed appreciation for not being excluded, described family togetherness, felt able to continue their role as caregivers. Described the OR as uncomfortable, were treated well by staff and informed continuously, but did not ask for information so as to not disturb. Findings are described in more detail in Table B, Supplemental Digital Content, http://links.lww.com/EJA/A773 and some are mentioned in Table 3 (themes). |
| Brüggemann et al., 2015, Brazil | Journal article | Qualitative | Regional and general | Healthcare professionals, 12 nurses and five technical directors from 12 institutions | No | NA | Healthcare staff found that OR is not a place for a companion; companions were not allowed in delivery rooms either; staff felt that companions do not have emotional and psychological preparation to participate and should not. Findings are described in more detail in Table B, Supplemental Digital Content, http://links.lww.com/EJA/A773 and some are mentioned in Table 3 (themes). |
| First author, year, country | Type | Design | Number of participants | Partner present? | Time to follow-up | Results and conclusion |
|----------------------------|------|--------|------------------------|------------------|------------------|-----------------------|
| Hugill,30 2015, UK         | Journal article | Qualitative, and personal experiences as doctors and parents | General | Eight parents | No | Not stated | All mothers mentioned the emotional significance of no one close to them or their baby being present in the OR; this was more important to them because they were under general anaesthesia. Authors speculate that there might be benefits of having the father present for CSGA but states that evidence is weak, and professional opposition can be strong. Findings are described in detail in Table 4 (primary outcome, general anaesthesia) and some are mentioned in Table 3 (themes). |
| Watts,6 2016, UK           | Conference abstract | Questionnaire survey | Regional and general | ‘Survey was sent to all obstetric leads in UK’. 73% response rate. | Yes and no | NA | All units allowed partners in for regional anaesthesia; a small number of units allowed partners to be present when providing general anaesthesia. Common benefits expressed were reduced anxiety for both mother and partner, improved communication and bonding. Most frequent risk identified were staff distractions, de-sterilisation and partner’s fainting. Findings are described in detail in Table 4 (primary outcome, general anaesthesia), Table 5 (secondary outcome, regional anaesthesia) and some are mentioned in Table 3 (themes). |
| Kondou,31 2018, Japan      | Journal article | Qualitative | Not stated | Nine fathers present at hospital during their wives’ first childbirth | No | One to 6 days after CS | Fathers described that they thought that doctors performed well during surgery and trusted them. During the CS, fathers feared for the life of their wives; felt anxiety while waiting. After the CS, fathers described not only relief, gratitude and pleasure, but also remaining anxiety and fearful. Findings are described in detail in Table B, Supplemental Digital Content, http://links.lww.com/EJA/A773 and some are mentioned in Table 3 (themes). |
| Pereda-Goikoetxea,32 2019, Spain | Journal article | Qualitative | Regional | 43 mothers, 5 had emergency CS (not possible to extract data specifically on CS); 33 for second interviews | No | Eight weeks and 8 months after CS | ‘The women considered the presence of their partners during childbirth the most important form of support’ ‘I wish the father could have been in the operating room’. Findings are described in Table B, Supplemental Digital Content, http://links.lww.com/EJA/A773 and some are mentioned in Table 3 (themes). |
| Maziero,33 2020, Brazil    | Journal article | Qualitative | Not stated | 29 health professionals, providing direct assistance to women in labor or CS; 11 nurses, 9 doctors and 9 nursing technicians | Investigates healthcare professionals’ reasons for not having the partner present | NA | Reasons for not having the partner present were that the partner might distract the staff and disturb their concentration, does not understand what is happening, an OR is not an adequate environment. Staff state that the partner should not be allowed in for high-risk pregnancies or emergencies. Authors’ conclusions are that having a partner present during labour and delivery is a booster for the adoption of other good practice; it is essential that hospitals establish a guarantee of a companion for all women, including during complicated births and caesarean sections. Findings are described in detail in Table B, Supplemental Digital Content, http://links.lww.com/EJA/A773 and some are mentioned in Table 3 (themes). |

An overview of all the included titles is presented. Manuscripts describing original clinical findings (qualitative and quantitative studies) are described in more detail in Tables 3–5. Manuscripts not describing clinical findings (letters, debate posts and nonsystematic reviews) are described in more detail in Table B in Supplemental Digital Content, http://links.lww.com/EJA/A773. CS, caesarean section (this is only used in the meaning ‘emergency caesarean section’ as studies concerning elective caesarean sections were not included); CSGA, caesarean section under general ‘Wang; CSRA, caesarean section under regional anaesthesia (epidural or spinal); OR, operating room.
Table 2 Quality assessment

| First author, year, country | Type | Quality of evidence |
|-----------------------------|------|---------------------|
| Can,27 1984, USA            | Journal article, retrospective cohort with follow-up observations | Low |
| Leach,21 1984, Canada       | Journal article, review (not systematic, published under the theme “thoughts and opinions”) | Very low |
| Svensen,23 1985, Norway (Norwegian) | Journal article | Low |
| Sakala,24 1988, USA         | Journal article, retrospective cohort. | Low |
| Freeman,42 1989, UK         | Letter, description of a case | Very low |
| Russell,35 1989, UK         | Letter, response to Freeman 1989 | Very low |
| Gadziala,36 1989, UK        | Letter, response to Freeman 1989 | Very low |
| Bogo,37 1990, UK            | Letter, opinion | Very low |
| Ceronio,37 1995, South Africa | Journal article | Low |
| Paravicini,38 1996, Deutschland (German) | Debate | Moderate |
| German society for Anesthesiology and Intensive Care Medicine,39 1999, Deutschland (German) | Statement from a medical society | Very low |
| Robinson,40 2004, UK        | Debate, pro | Very low |
| Smiley,41 2004, USA         | Debate, con | Very low |
| Tankka,35 2005, Finland     | Abstract (journal article only available in Finnish and can, therefore, not be evaluated; abstract available in English). Retrospective cohort, questionnaire. | Low |
| Savage,42 2007, UK          | Journal article, national questionnaire survey | Moderate |
| Millmore,43,44 2010, UK     | Conference abstract, survey of healthcare staff’s opinions | Low |
| Millmore,45 2012, UK        | Conference abstract, survey of parents’ opinions | Low |
| Lindberg,46 2013, Sweden    | Journal article, qualitative study | Moderate |
| Brüggemann,47 2015, Brasil  | Journal article, qualitative study | Moderate |
| Hugill,48 2015, UK          | Journal article, qualitative study and personal experiences and opinions | Low |
| Watts,49 2016, UK           | Conference abstract, national questionnaire survey | Low |
| Kondou,50 2018, Japan       | Journal article, qualitative study | Moderate |
| Pareda Golkoretza,51 2019, Spain | Journal article, qualitative study | Good |
| Mazzieri,52 2020, Brazil    | Journal article, qualitative study | Moderate |

Included studies were evaluated on study level based on the MMAT tool from the Joanna Briggs Institute for scoping reviews and judged to be of very low, low, moderate or good-quality, overall. See supplement material for details on risk-of-bias evaluation for each study (MMAT for all manuscripts containing a description of clinical investigations).

Table 3 Themes and Outcomes based on original clinical research, marked as [finding], or opinions, marked as [claim]

| Con Theme                           | Quotes                                                                                                                                                                                                 |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The OR is only for surgery          | ‘Health-care professionals who persist in viewing a caesarean birth as first, and only, surgery’ [claim] Leach 198441                                                                                     |
|                                     | ‘An OR is only for surgery, not “family care”’ [claim] Paravicini 199648                                                                                                                             |
| The OR is an unpleasant environment | ‘A claim is that the OR is not a place for a companion’ [claim] Brüggemann 201529                                                                                                                 |
|                                     | ‘[Fathers] found the theatre, clothes, temperature and the prospect of blood distancing and contributing factors to their raised anxiety’ [finding] Ceronio 199527                                             |
| Wish to protect the integrity of the mother | ‘The smell in the OR, or wearing a facemask is difficult for the partner’ [claim] Paravicini 199638                                                                                               |
|                                     | ‘experiencing the operating room as an uncomfortable, scary environment’ [finding] Lindberg 201328                                                                                                    |
|                                     | ‘Some claim that the environment is not adequate’ [claim] Mazzieri 202043                                                                                                                         |
| A CS is not a normal birth          | ‘Some and perhaps many women would choose not to have their partners see them intubated and paralyzed under general anaesthesia’ [claim] Smiley 200441                                                  |
|                                     | ‘Purport reasons for fathers continued exclusion include staff perceptions that men do not want to see their partner “like that”’ [claim] Hugill 201520                                                  |
| Fear that the partner will disturb the concentration of the staff | ‘A caesarean section is a pathological process, as opposed to the natural birth’ [claim] Paravicini 199638                                                                                              |
|                                     | ‘It is similarly rather silly to try to pretend that one can treat a surgical procedure under general anaesthesia as if it were a normal, “natural” birth’ [claim] Smiley 200441 |
| Mother under general anaesthesia is not ‘present’ | ‘His exclusion has been justified with concerns that he might faint, contaminate the sterile field or violate another patient’s privacy’ [claim] Leach 198441                                              |
|                                     | ‘I found the induction of general anaesthetic stressful’ [finding] Russell 1989                                                                                                                         |
|                                     | ‘The staff completed the operation without mishap in an atmosphere of increasing menace and threat of assault’ [finding] Gadelrab 198925                                                                 |
|                                     | ‘He risks contaminating the sterile area or otherwise harm his wife’ [claim] Paravicini 199638                                                                                                      |
|                                     | ‘the very real possibility that the anaesthesiology-surgical team will perform less well under the observation of the woman’s partner’ [claim] Smiley 200441                                           |
| Medico-legal complaints             | ‘The companion interferes during the professionals’ procedures, besides not being able to understand what is happening’ [claim] Mazzieri 202043                                                              |
|                                     | ‘A woman who has delivered a child under general anaesthesia cannot experience the birth, determine the health or sex of the infant, or welcome it into the world’ [claim] Leach 198441             |
|                                     | ‘There is no way for the family to share the moment when the mother is not present’ [claim] Smiley 200441                                                                                            |
|                                     | ‘Someone who witnesses an injury to a loved one can sue for and collect damages for the emotional trauma of being present when the event happened’ [claim] Smiley 200441                                               |
|                                     | ‘I feel that this [asking the partner to leave] is mainly because of the medico-legal consequences if matters go wrong’ [claim] Robinson 200445                                                           |
|                                     | ‘Having the father in the OR could turn into a legal right, so he would also demand [and call for an attorney] to be present the next time, and the “movement” to allow lay people in the OR will spread to other specialties’ [claim] Paravicini 199638 |
Concerning the ‘pro’ side, we identified seven themes: parents’ wish for presence; better experience with caesarean section; bonding with the baby; parents’ right to presence; clinical outcomes not being worse; waiting time (when not present) very trying; father as ‘family witness’.

For each quote from the manuscripts, we have stated whether it is a clinical finding based on original clinical research (marked in blue and as [finding]) or whether it is an expression of personal opinion (marked as [claim]). The themes on the ‘con’ side are mainly based on claims, whereas the themes on the ‘pro’ side are mainly based on clinical findings.

Results concerning the primary outcome (available evidence on having the partner present during emergency caesarean section with general anaesthesia) is presented in Table 4. Studies were included in this table if they described original clinical findings. Six manuscripts contained relevant data. Five of these studies were rated as having a low quality of evidence, and one was rated moderate. Overall, very little data was available and, in some cases, it was not possible to extract the specific data.
relating to emergency caesarean section under general anaesthesia as manuscripts described a mix of emergency and elective caesarean section. On the basis of these limited low quality data, it seems that, generally, having partners present during emergency caesarean section with general anaesthesia is rare that staff are often reluctant to let the partner be present when the mother is under general anaesthesia, but that mothers and partners seem to prefer that the partner is present.

Results concerning the secondary outcome (available evidence on having the partner present during emergency caesarean section with regional anaesthesia) are presented in Table 5. Nine manuscripts contained relevant clinical data on this outcome. Five of these studies were rated as having low quality of evidence, three as moderate and one as having a good quality of evidence. On the basis of these limited data of predominately low quality, it seems that, generally, having the partner present during emergency caesarean section with regional anaesthesia is a more widespread practice that staff are more inclined to let the partner be present in the operating room, and that mothers and partners prefer that the partner is present.

### Discussion

This scoping review provides the first overview of available evidence on the presence of the partner during emergency caesarean sections. We identified 24 published relevant titles, of which 15 contained original clinical research. For most titles, quality of evidence was very low or low, six were rated as moderate, and one manuscript was rated as providing good quality evidence. The contents formed 15 themes that were either in favour or against having the partner present during emergency caesarean section. On the basis of our findings, it seems that most arguments against having the partner present in the operating room are based on opinions, thoughts and feelings, whereas studies presenting clinical findings tend to be in favour of having the partner present during emergency caesarean section.

The primary outcome of this review was the available evidence on having the partner present during caesarean section with general anaesthesia. We found that little evidence exists on this topic, and the available evidence is of low quality. Generally, and with great reservations because of the scarcity and quality of data, staff seemed reluctant to let the partner be present during caesarean section under general anaesthesia, whereas mothers and partners seemed to prefer the partner’s presence.

The secondary outcome of this review was the available evidence on having the partner present during caesarean section under regional anaesthesia. Here we found a little more available evidence but still quite limited. Half of the studies were more than 20 years old. With regional anaesthesia, both mothers and partners seem to wish for the presence of the partner and describe the caesarean section
Partner’s presence for emergency caesarean sections

Table 5 Secondary outcome, regional anaesthesia with partner present

| Study             | Findings                                                                 | Quality of evidence |
|-------------------|---------------------------------------------------------------------------|---------------------|
| Cain et al.,22 1984 | 23 couples were interviewed; it can be deduced from the data that 9 to 13 had CSRA with father present, whereas the rest had either general anaesthesia or CSRA without the father present. 'When the father was present at the delivery the mother reported positive feelings related to his presence, whereas mothers reported negative feelings about the father’s absence.’ ‘Similarly, fathers felt good about their own presence and negative when they were absent’. ‘Also, mothers had closer contact with their infants when their husbands had been present at birth’. ‘When the father was present the couple related more positive circumstances in the hospitalisation period following surgery’. [At 3 months follow-up] there were no statistically significant differences in parent-infant interaction except that fathers who did not attend caesareans showed a greater intensity of positive affect to their infants’. | Low |
| Svensen23 1985    | Mothers’ experience:                                                      | Low                |
|                   | Found the CS terrib/ead          | Found the CS ‘nothing special’ | Found the CS good/very good | Do not know | If you were to have another CS, would you choose epidural with partner present? |
|                   | General anaesthesia 30%         | 31%                   | 27%                     | 6%          | 55%                                                  |
|                   | Epidural without partner 7%     | 17%                   | 76%                     | 0%          | 76%                                                  |
|                   | Epidural with partner 0%        | 0%                    | 94%                     | 6%          | 100%                                                 |
|                   | ‘Before the father arrives, the mother is anxious. When he is there, she relaxes, seems to feel safer and calmer. The atmosphere gets more positive’. ‘15 fathers felt good during the CS, two felt some discomfort, but did not get unwell or had to leave the OR’. ‘All fathers would recommend other fathers to participate in CS’. One child in the group with father present needed full resuscitation but lived. Father: ‘It was especially good for me to be present and see the efforts being made to save the baby. It was doing really bad, did not breathe. If it had ended bad, I would have known that everything possible had been done for it’. Complications and procedure time was alike between groups. | |
| Sakala24 1988     | 78 emergency CS with the partner present, and 86% of the father-present group received regional anaesthesia (data cannot be separated further). When controlling for mode of anaesthesia (regional vs. general), there were no differences between maternal and neonatal outcomes. | Low |
| Ceronio27 1995    | Five mothers, five fathers, emergency CSRA. ‘two mothers from the study mentioned this [having the spouse present] as supportive during the caesarean section’. Fathers: ‘Only experiences of feeling faint and physically shaken were stated’. ‘The fathers asked many questions […] Acceptance of the caesarean section was easier for those fathers who understood the reasons for the procedures’. ‘Disappointment as the most intense emotion and said that they would not recommend anyone to have a caesarean section’. ‘No feelings of exclusion were noted in the study but rather the feeling of possession towards their infants as they had first opportunity to hold and nurture them’. ‘Coerced into the situation of a caesarean section being performed without feeling adequately prepared and, therefore, did not feel in control’. ‘Found the theatre, theatre clothes, temperature in the theatre and the prospect of blood very disturbing’. ‘Support from healthcare personnel was of cardinal importance’. | Moderate |
| Savage30 2007     | Survey of clinical directors in gynaecology and obstetrics in the United Kingdom, 151 replies. ‘The increased use of regional anaesthesia has changed the nature of the operation and led to partners being increasingly invited to watch the birth. All consultants said they allowed some partners to attend. […] Another said: ‘If under epidural she can have one person in attendance’, Two also mentioned that the anesthetist should be happy about it. Two said that partners were not invited to emergency caesareans’. | Moderate |
| McIlmoyle42 2010  | Questionnaire, 81 staff members performing CS (data cannot be separated in elective vs. emergency). 62% of staff agreed or strongly agreed that partners should be present during CSRA. 19% disagreed or strongly disagreed. | Low |
| McIlmoyle43 2012  | Questionnaire, 56 mothers, 53 partners (33 elective, 23 emergency CS, data cannot be separated in elective vs. emergency). 99% of mothers agreed or strongly agreed that it was important for their partner to be present during CSRA. 98% of partners agreed or strongly agreed that it was important to be with the woman for CSRA. | Low |
as a predominantly positive experience, with the notable exception of the South African study from 1995,\textsuperscript{17} in which the fathers described quite a few negative feelings, although they did not express a wish to be left outside the OR. Generally, descriptions of staff opinions indicate that they have a more favourable attitude towards the partner’s presence in the OR during emergency caesarean section when the mother is under regional anaesthesia.

None of the included studies assess cases where either the infant or mother died during the emergency caesarean section or infants had a bad neurological outcome. Many studies excluded these cases, and some studies just refrained from mentioning them. It is likely that the parents’ experience with a caesarean section is highly affected by the outcome of mother and child. The unfortunate parents, who do not leave the hospital with a healthy infant following an emergency caesarean section, are not represented in any of the included studies. However, perhaps this vulnerable group is even more relevant to consider, in terms of future research.

In a different context, Maxton\textsuperscript{44} investigated parental presence during resuscitation efforts in a paediatric ICU, both in cases where the children survived or died. The authors found that ‘the possible trauma of witnessing the resuscitation scene was overshadowed by the parents’ desire to be there for and with their child;’ that ‘memories of the resuscitation were not long-lasting or traumatic as the parents’ overwhelming need was to be there for their child’ and ‘Not being present would have been more distressing and coping made more difficult’. Whether this also applies to the context of emergency caesarean sections and a newborn child remains unknown.

Having relatives present during emergency medical events is a growing healthcare practice.\textsuperscript{45} Patients are most often found to prefer having their relatives present, and many relatives also prefer to be present, or at least to be given the opportunity to be present.\textsuperscript{44,46} A British group investigated both clinicians’ and parents’ views on providing immediate neonatal care and resuscitation at birth beside the mother and found that ‘Families were positive about neonatal care being provided at the bedside, and felt it gave reassurance about their baby’s health and care’,\textsuperscript{37} and ‘Overall, most clinicians were positive about providing immediate neonatal care at the maternal bedside, particularly in terms of the clinicians’ perception of the parents’ experience’.\textsuperscript{48} However, they also found that some staff reported concerns about performing more intensive interventions in front of parents.\textsuperscript{48} and that the communication with healthcare staff/receiving adequate information during the event was very important to parents.\textsuperscript{47} Another group investigated the experience of fathers who were present during the resuscitation of their baby at delivery and found that the fathers recalled their emotions during resuscitation vividly and they were mostly negative, although no fathers expressed a wish not to be present.\textsuperscript{49} The study also found that the fathers did not feel that they received the information or support that they needed from the medical staff, and a few of the participants had symptoms of post traumatic stress disorder.\textsuperscript{49} Several of the studies included in this review also mention communication and support from healthcare staff as crucial for partners during emergency caesarean sections.\textsuperscript{22,23,27,28,31,32}

Whether or not to include partners during emergency caesarean section seems to be influenced by the local culture. There may be large differences amongst cultures regarding the general expectation or wish from the partner to be present during the caesarean section, as the degree and type of relative participation can vary. Some of the areas where most children in the world are born, such as India, China and the majority of the African continent, are not represented in this review, as no studies on the topic have been published originating from these areas.

Patient satisfaction depends highly on what is expected and what is the norm at a given time, setting and culture.

### Table 5 (continued)

| Study | Findings | Quality of evidence (see Table 2 for details) |
|-------|----------|---------------------------------------------|
| Watts\textsuperscript{46} 2016 | Questionnaire, all obstetric leads in the United Kingdom. ‘All units allowed partners in for regional anaesthesia, with the majority of these being before commencing the regional anaesthesia. […] The large majority of units did not have a local written guideline, a leaflet for the patient’s partner or a member of staff formally identified to look after the partner. ‘Common benefits expressed included reduces anxiety for both mother and partner, improved communication and bonding. Most frequent risk identified were staff distractions, desterilization of equipment and partners fainting’. | Low |
| Pereda-Goikoetxea\textsuperscript{39} 2019 | Qualitative study, five mothers had CSRA. ‘The women considered the presence of their partners during childbirth the most important form of support’ ‘I wish the father could have been in the operating room’. | Good |

Studies are included in this table if they describe original clinical findings (as opposed to personal opinions) concerning having the partner present during emergency caesarean section under general anaesthesia. The following studies, that describe original clinical findings, were not included in the table as no partners were present during caesarean section under regional anaesthesia (as far as can be evaluated based on the available data in the manuscript) or were asked about their thoughts about not being present: Brüggemann\textsuperscript{29}; no participating mothers had regional anaesthesia: Hugill\textsuperscript{30}; not stated, which mode of anaesthesia was considered/used: Lindberg, 28 Kondou, 31 Maziero 33 and Tarkka, 35 CS, caesarean section (only used in the meaning ‘emergency caesarean section’ as studies concerning elective caesarean sections were not included); CSRA, caesarean section under regional anaesthesia; OR, operating room.
The area of patient–doctor relationship and patient autonomy has changed much in the past decades, and most patients and relatives in the western world will nowadays probably expect to have their personal preferences taken into consideration when it comes to decisions concerning their care, including emergency caesarean sections. However, the challenge for the anaesthesiologist can often be that in the most urgent situations, there is no time to discuss this, and the anaesthesiologist, here in the role of the perioperative doctor, must make a decision.

This scoping review is the first to provide an overview of the available evidence on the presence of the partner during emergency caesarean sections. It has strengths, as it is based on a thorough, systematic literature search with broad inclusion criteria, and no study designs were excluded. Our language restrictions were limited. Quality assessment is not a mandatory part of scoping reviews, but we find that providing it increases the accessibility of the available evidence.

This review also has limitations. Despite our efforts, relevant publications might have been missed, or excluded because of language restrictions. We were unable to obtain additional information from authors, despite attempts to contact several of them. As described above, large geographical and cultural areas are not represented by the available studies, and we found no descriptions of cases in which the mother and/or infant did not survive. Eight of the included titles were published in the 1980s and three in the 1990s. Much has changed since then regarding standards for reporting clinical trials, publishing protocols, the possibility for adding supplementary material and making research data available. It might seem unjust to judge the quality of evidence in these rather old publications according to our 2022 standards; however, it is not possible to assess the included studies equally and fairly based on different criteria.

The results of a review depend on the results of the included studies on which it is based. As the available evidence in this review proved to be both sparse and with a general low quality of evidence, it is not possible to provide directives on how best to handle the partner during emergency caesarean sections. In order to do this, well designed clinical research is needed, focusing on the role of the partner during emergency caesarean sections. Several of the included studies are unclear when it comes to the urgency of the caesarean sections (which is nowadays clinically divided into categories or colour codes); this is of significant clinical importance and makes it difficult to extract the full meaning of the data. This is important to keep in mind when assessing the data in this review, as the clinical situation and parental experience with a very urgent caesarean section within a very short timeframe is likely to be quite different from a less urgent emergency caesarean section. Furthermore, some of the studies are also unclear when it comes to the details of the anaesthesia. In future research, it is important to report details on both the category of urgency and the anaesthesia used.

Conclusion

In conclusion, very little evidence was available on the presence of the partner during emergency caesarean sections, especially when performed with general anaesthesia. The quality of evidence in the included studies was generally low or moderate, and studies were often not clear on the urgency of the emergency caesarean sections. Many healthcare professionals seem reluctant to let the partner be present during emergency caesarean sections, especially with general anaesthesia, whereas mothers and partners seem to prefer it. More research, of good quality, is warranted, on both clinical outcomes, mothers'/partners’ perspectives and those of the healthcare staff.

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