Cesarean section in urgency/emengency: Locoregional Anaesthesia vs General Anesthesia in rapid sequence

Dott.ssa R.Alessi

Ospedale San Giovanni Di Dio
Agrigento

Sliding doors effect

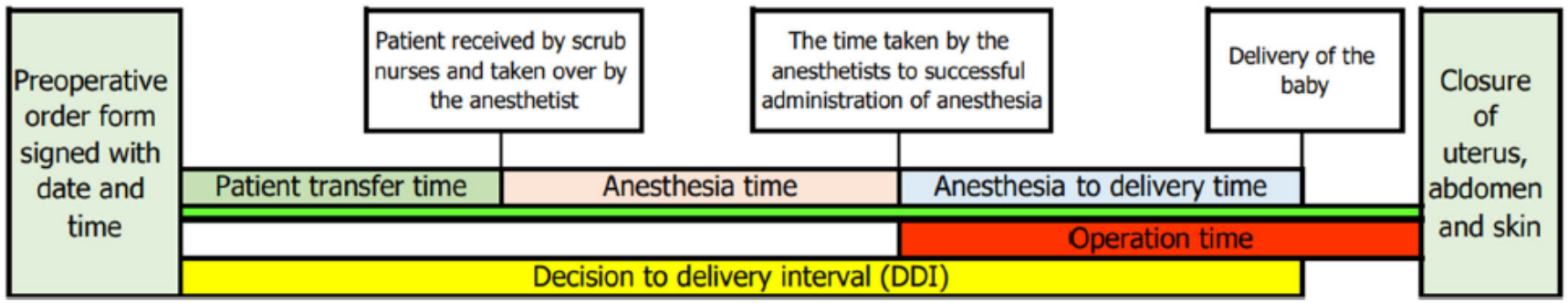
Situation awareness

Category 1: Immediate threat to life of the woman or fetus

30’……15’

(As soon as possible)

RA or GA…in rapid sequence!



Evaluation of decision to delivery interval and its effect on feto-maternal outcomes in Category-I emergency cesarean section deliveries in Phuentsholing General Hospital, 2020: A retrospective cross-sectional study. Y.Dorjei et al. Health Sci. Rep. 2023;6:e1050.

RCOA
Royal College of Anaesthetists

7.6 Caesarean section anaesthesia: technique and failure rate

Dr Makani Purva, Hull Royal Infirmary
Dr S Mike Kinsella, University Hospitals Bristol

Why do this quality improvement project?

Emergency anaesthesia for caesarean section may have to be achieved very rapidly and carries significant risks.

Background

Regional anaesthesia is preferred for caesarean section because of the lower risk of maternal and neonatal morbidity. Most women opt for regional anaesthesia

Anesthesiology 2007; 106:843–63

Practice Guidelines for Obstetric Anesthesia

*An Updated Report by the American Society of Anesthesiologists Task Force on Obstetric Anesthesia**

Recommendations. Early insertion of a spinal or epidural catheter for obstetric (*e.g.*, twin gestation or preeclampsia) or anesthetic indications (*e.g.*, anticipated difficult airway or obesity) should be considered to reduce the need for GA if an emergent procedure becomes necessary. In these cases, the insertion of a spinal or

High Safety Profile

The ideal situation is: epidural catheter already positioned!

Top-up with lidocaine 2% (and sodium bicarbonate 8,4 %) 10-15 ml

5% of labour epidurals will not work well enough for a Caesarean

Reg Anesth Pain Med 2022;47(Suppl 1):A1–A315

Anaesthesia
Journal of the Association of Anaesthetists of Great Britain and Ireland
Anaesthesia, 2010, **65**, pages 664–669 doi:10.1111/j.1365-2044.2010.06368.x

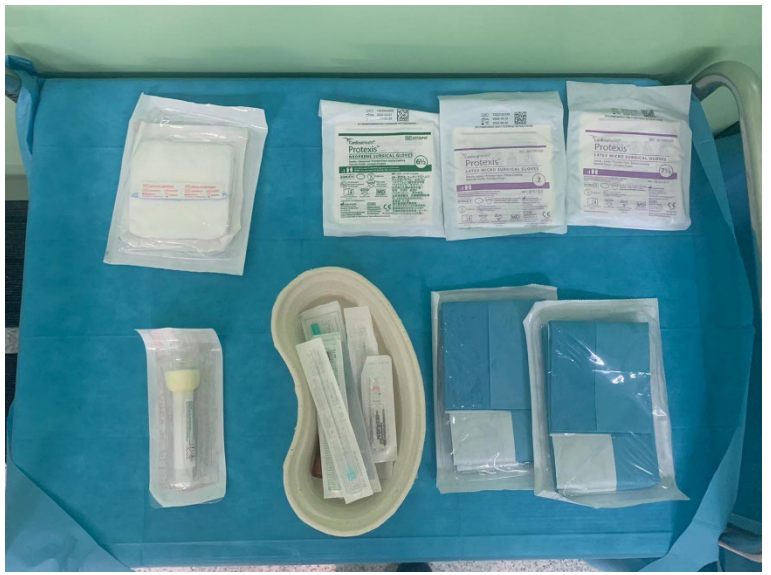
ORIGINAL ARTICLE

Rapid sequence spinal anaesthesia for category-1 urgency caesarean section: a case series

S. M. Kinsella,[1] K. Girgirah[2] and M. J. L. Scrutton[1]

Box 1: Components of the rapid sequence spinal (adapted from reference [4])

- Deploy other staff for intravenous cannulation and monitoring – don't inject spinal till cannula secured.
- Pre-oxygenate during attempt.
- 'No touch' technique – gloves only with glove packet as sterile surface for equipment. Skin prepared with single wipe of 0.5% chlorhexidine solution.
- If no opioid – consider increased dose hyperbaric bupivacaine 0.5% (up to 3 ml); add fentanyl 25 μg if procuring it does not produce unacceptable delay.
- Local infiltration not mandatory.
- One attempt at spinal unless obvious correction allows a second.
- If necessary start surgery when block ≥ T10 and ascending. Be prepared to convert to general anaesthesia – keep mother informed.



SCIE DOI: 10.14744/scie.2023.66674
South. Clin. Ist. Euras. 2023;34(2):103-107

Rapid Sequence Spinal Anesthesia for Category 1 Cesarean Section: Is it Fast, Effective, and Reliable?

Kübra Taşkın,[1] Cansu Ofluoglu,[2] Hulya Yilmaz Ak,[1] İrem Durmuş,[1] Merve Bulun Yediyıldız,[1] Kemal Saracoglu,[1] Banu Cevik[1]

Table 1. Minimum-maximum and mean values of the processing times

	Min.-Max.	Mean (SD)
Preparation time (sec)	39–76	52.1±0.4
Application time (sec)	24–120	47.3±1.6

From the literature, it is difficult to determine the time required precisely and clearly to initiate the case with regional or GA in an emergency (category 1–3) CS. In the case series of Kinsella et al., the median duration of spinal preparation was 2 min.[7] Another observational study of emergency CS showed that the average time from wearing gloves to positioning the patient after spinal injection was 5 min.[15] In their study, Gunka and Douglas found a minimal difference between GA induction and spinal injection in anesthesia administration for simulated CS, with an median of 2 min 6 s for the first one and 1 min 58 s for the second.[16] Within the study conducted by Bhattacharya et al., RSGA and RSSA were compared, and 144.80±3.42 s with RSGA versus 131.20±3.40 s with RSSA; the shorter duration of SA with $p<0.001$ supports this study.[14] In this study, the application time was shorter than both the original time of Kinsella et al. and the other studies mentioned (preparation time 52.1±0.4 s, administration time 47.3±1.6 s). The reason for this is considered to be the changes made in the RSSA technique. Since the procedure is easier to perform in the sitting position, the spinal injection was performed in this position in this study, and this step was skipped since the patients already had intravenous access. For asepsis, a one-time wiping was applied with 0.5% chlorhexidine solution, which was proven to be adequate according to previous studies.[8,16]

Current Anesthesiology Reports (2021) 11:18–27
https://doi.org/10.1007/s40140-021-00437-6

OBSTETRIC ANESTHESIA (LR LEFFERT, SECTION EDITOR)

The Current Role of General Anesthesia for Cesarean Delivery

Laurence Ring[1] · Ruth Landau[1] · Carlos Delgado[2]

- Decrease in use of general anesthesia
- Decrease the risks associated with general anesthesia and maternal mortality

approaches for the provision of safe anesthesia in urgent circumstances include (1) neuraxial anesthesia; (2) appropriate communication between obstetricians, perinatologists, and anesthesiologists; and (3) ongoing training including drills and simulation [7]. A recent study evaluating the implementation of standardized team communication and processes to

the overall rate of general anesthesia for cesarean deliveries should be lower than 5%, and the Royal College of Anaesthetists recommend a rate lower than 1% for elective cesareans and less than 5% for those classified as emergent [21].

BJA Education, 20(6): 201–207 (2020)

doi: 10.1016/j.bjae.2020.03.003
Advance Access Publication Date: 21 April 2020

General anaesthesia in obstetrics

C. Delgado[1,*], L. Ring[2] and M.C. Mushambi[3]

[1]University of Washington, Seattle, WA, USA, [2]Columbia University Medical Center, New York, NY, USA and [3]Leicester Royal Infirmary, Leicester, UK

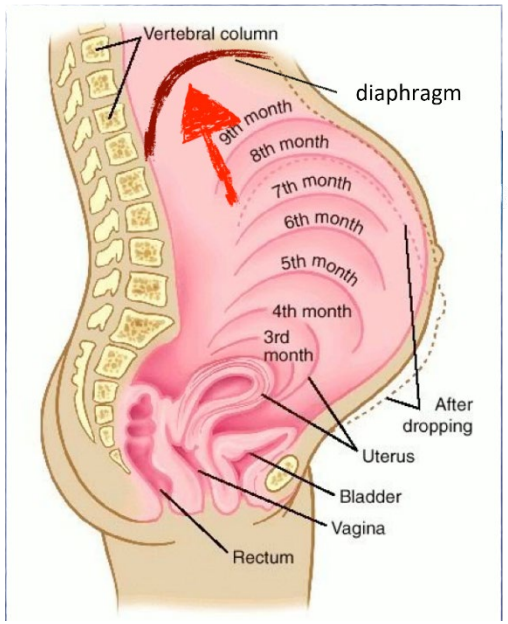
*Corresponding author: delgadou@uw.edu

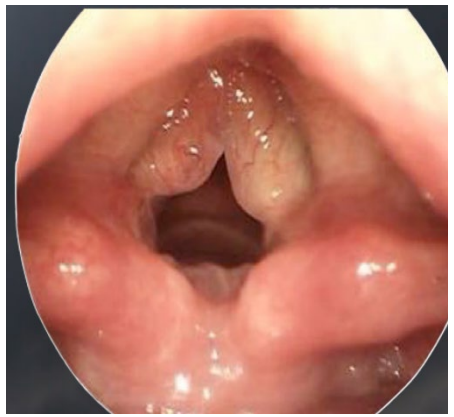
In USA: 35% -1981
25%- 2011
6% - 2020

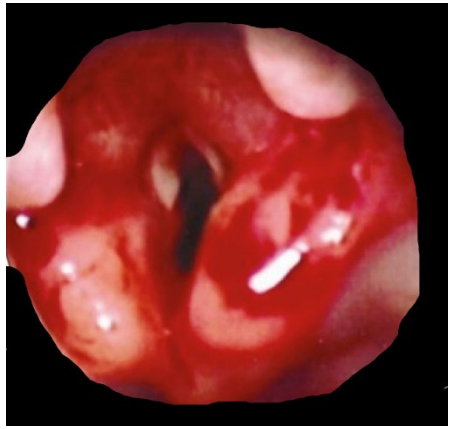
General Anesthesia in rapid sequence

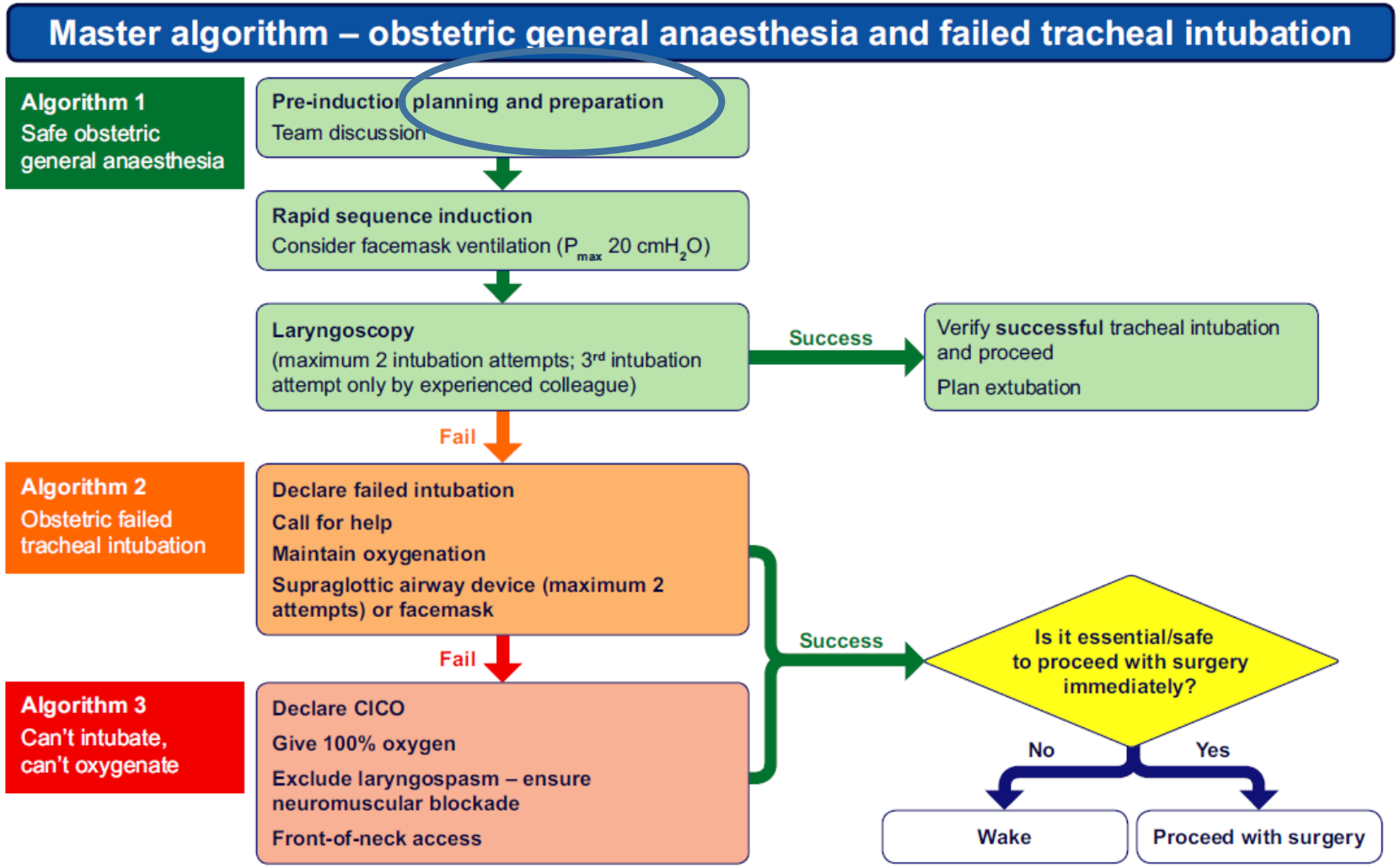
More difficult: why?

More complex airway management








Master algorithm – obstetric general anaesthesia and failed tracheal intubation
Algorithm 1
Safe obstetric general anaesthesia
Pre-induction planning and preparation
Team discussion
Rapid sequence induction
Consider facemask ventilation (P_{max} 20 cmH_2O)
Laryngoscopy
(maximum 2 intubation attempts; 3rd intubation attempt only by experienced colleague)
Success
Verify successful tracheal intubation and proceed
Plan extubation
Fail
Algorithm 2
Obstetric failed tracheal intubation
Declare failed intubation
Call for help
Maintain oxygenation
Supraglottic airway device (maximum 2 attempts) or facemask
Fail
Algorithm 3
Can't intubate, can't oxygenate
Declare CICO
Give 100% oxygen
Exclude laryngospasm – ensure neuromuscular blockade
Front-of-neck access
Success
Is it essential/safe to proceed with surgery immediately?
No
Yes
Wake
Proceed with surgery

Algorithm 1 – safe obstetric general anaesthesia

Pre-theatre preparation
Airway assessment
Fasting status
Antacid prophylaxis
Intrauterine fetal resuscitation if appropriate

Plan with team
WHO safety checklist/general anaesthetic checklist
Identify senior help, alert if appropriate
Plan equipment for difficult/failed intubation
Plan for/discuss: wake up or proceed with surgery (Table 1)

Rapid sequence induction
Check airway equipment, suction, intravenous access
Optimise position – head up/ramping + left uterine displacement
Pre-oxygenate to $F_{ET}O_2 \geq 0.9$/consider nasal oxygenation
Cricoid pressure (10 N increasing to 30 N maximum)
Deliver appropriate induction/neuromuscular blocker doses
Consider facemask ventilation (P_{max} 20 cmH_2O)

1st intubation attempt
If poor view of larynx optimise attempt by:
- reducing/removing cricoid pressure
- external laryngeal manipulation
- repositioning head/neck
- using bougie/stylet

Fail

Ventilate with facemask
Communicate with assistant

2nd intubation attempt
Consider:
- alternative laryngoscope
- removing cricoid pressure

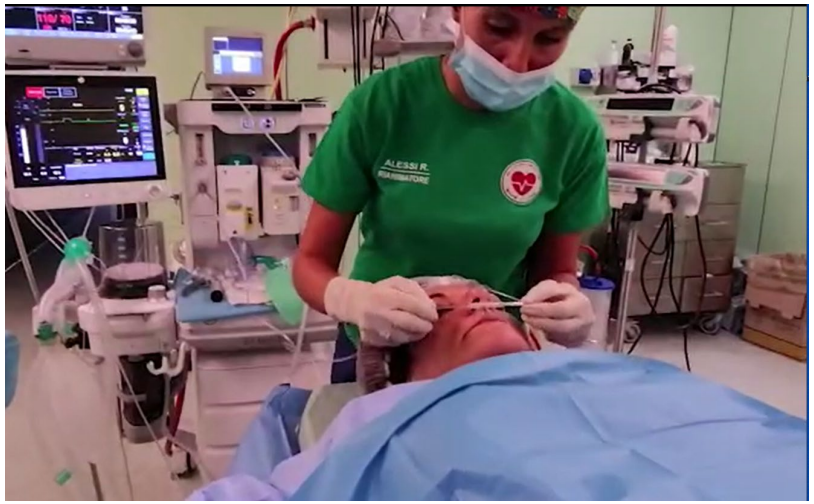
3rd Intubation attempt only by experienced colleague

Fail

Follow Algorithm 2 – obstetric failed tracheal intubation

Success

Verify successful tracheal intubation
Proceed with anaesthesia and surgery
Plan extubation



Algorithm 2 – obstetric failed tracheal intubation

Declare failed intubation
Theatre team to call for help
Priority is to maintain oxygenation

Supraglottic airway device
(2nd generation preferable)
Remove cricoid pressure during insertion
(maximum 2 attempts)

Facemask +/– oropharyngeal airway
Consider:
- 2-person facemask technique
- Reducing/removing cricoid pressure

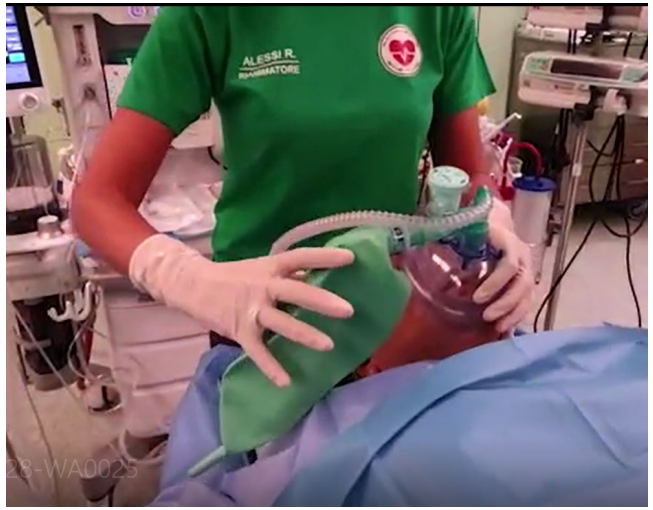
Is adequate oxygenation possible?

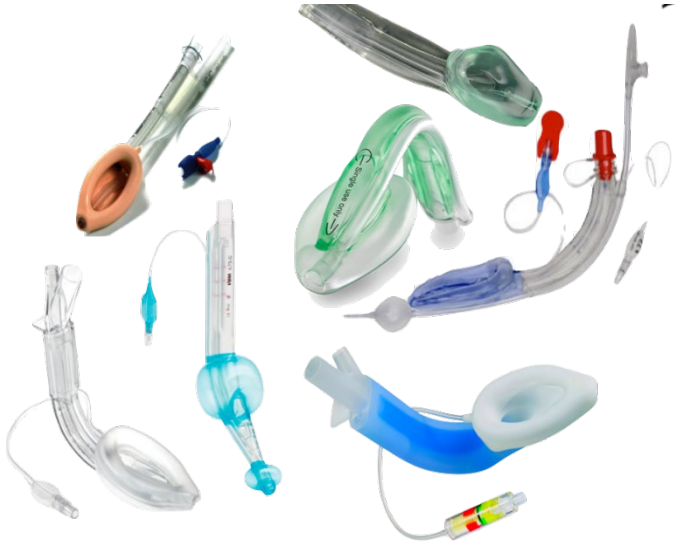
No → **Follow Algorithm 3**
Can't intubate, can't oxygenate

Yes → **Is it essential/safe to proceed with surgery immediately?**

No → **Wake**

Yes → **Proceed with surgery**





Anaesthesia 2015, 70, 1286–1306 doi:10.1111/anae.13260

Guidelines

Obstetric Anaesthetists' Association and Difficult Airway Society guidelines for the management of difficult and failed tracheal intubation in obstetrics*

M. C. Mushambi,[1] S. M. Kinsella,[2] M. Popat,[3] H. Swales,[4] K. K. Ramaswamy,[5] A. L. Winton[6] and A. C. Quinn[7,8]

Extubation of the trachea

Problems at the end of anaesthesia and postoperatively may relate to pulmonary aspiration secondary to regurgitation or vomiting, airway obstruction or hypoventilation [31, 45, 138, 156, 157]. The Fourth National Audit Project of the Royal College of Anaesthetists and the Difficult Airway Society (NAP4) [45] showed that almost 30% of all adverse events associated with anaesthesia occurred at the end of anaesthesia or during recovery. In a series of 1095 women having general anaesthesia for caesarean section, McDonnell et al. recorded regurgitation in four cases at intubation and

Debriefing and follow-up

Following an anticipated or unanticipated difficult airway, task debriefing is an important opportunity for the individual and team to reflect on their performance. Successful debriefing is achieved by identifying aspects of good performance, areas of improvement and suggestions of what could be done differently in the future [45, 162, 163].

Mannella *et al. BMC Pregnancy and Childbirth* (2023) 23:272
https://doi.org/10.1186/s12884-023-05591-9

BMC Pregnancy and Childbirth

RESEARCH Open Access

Five actions for five people: emergency cesarean section protocol

Paolo Mannella[1*], Federica Pancetti[1], Andrea Giannini[1], Eleonora Russo[1], Magdalena Montt-Guevara[1] and Tommaso Simoncini[1]

- Hi-fidelity simulation has been demonstrated to improve competencies
- Improve patient outcomes
- Develop and enhance teamwork

Improving the quality of assistance and in the perception of staff who work as a team.

Non-technical skills :

- Leadership
- Decision-making
- Communication
- Teamworking

Gynaecologist/ Surgeon	
1	Making decision for eCS
2	Communicating with patient and relatives about eCS and obtaining informed consent
3	Calling for other operators (anaesthesiologists, neonatologists, another midwife, eventual second operator)
4	Preparing for the surgical procedure (wearing surgical mask, overshoes and disposable cap, surgical hand washing, wearing surgical clothes)
5	Surgical site disinfection, bladder catheter application, disinfection and eCS execution.
Anaesthesiologists	
1	Going to patient and evaluating which type of anaesthesia perform to
2	Checking allergies and last meal
3	Preparing two vein accesses (16G or 14G)
4	Preparing drug and material for anaesthesia
5	Inducing local or general anaesthesia
First Midwife (operating theatre nurse)	
1	Calling second midwife
2	Preparing for the surgical procedure (wearing surgical mask, overshoes and disposable cap, surgical hand washing, wearing surgical clothes)
3	Setting the operating table
4	Dressing the gynaecologist
5	Helping the gynaecologist on eCS
Second Midwife (scrub nurse)	
1	Helping first operating room nurse on setting up operating table
2	Connect reservoir for bladder catheter.
3	Helping anaesthesiologist for anaesthesia procedure
4	Completing preparation of operative room (electrosurgical unit, vacuum, drugs etc.)
5	Take neonate to neonatologist
Healthcare Assistant	
1	Undressing patient and preparation of the patient for the surgical room
2	Moving patient on the stretcher to the surgical room
3	Positioning of the surgical table, aiding the anaesthesiologist
4	Orientation of the surgical room light
5	Setting of bracelets for mom-neonate identification

Remember to be:

- Intuitive (situational awareness)
- Careful (you are responsible of the mother's life)
- Humble (call for help)
- Sharer (briefing/debriefing even while having your morning coffee)
- Anesthesist (do teamwork)

No one is strong alone but we are strong together!