

Checklists for obstetric patients to improve maternal safety?

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7.10.2011

In Tartto

Checklist?

- Background
- Surgical Safety Checklist
- Maternal Mortality
- The Parturient as a Patient
- Obstetric Anesthesia Safety Checklist?

In the World

- 234 million operations/year
- Reported complications 3 – 16 %
 - * surgical-related adverse events
- Patient mortality related to operations 0.4 – 0.9 %
- About one million deaths during operations / year
 - * some preventable in all countries and settings
 - * inadequate anaesthetic safety practices
 - * poor communication among team members
 - * "human error"
 - * "emergency" poses the highest risk!

Surgical checklists

- The model from aviation: Karl RC. Aviation. J Gastrointest Surg 2009;13:6-89
- WHO 10/2004 Safe surgery safe lives - programme
** A World Alliance for Patient Safety
www.who.int/patient_safety
- Scientific data: The use of checklists has been associated with significant reductions in complication and death rates
** Haynes AB, Weiser TG et al
A surgical safety checklist to reduce morbidity and mortality in a global population. N J Med 2009; 360:491-9

WHO Surgical safety checklist

10 essential objectives

1. The right patient
2. The right operation
3. The team knows each other, knows what to do
4. The team communicates all the time
5. The right technique
6. Right medication/equipments, monitoring
7. The risk of infection is known
8. Instruments checked
9. Blood/tissue samples (PAD): identification
10. To follow/register the results of the operations, treatments

The surgical checklist

- Before induction of anaesthesia
- Before skin incision
- Before the patient leaves the operating room

* all steps should be checked verbally with the appropriate team member (a single person lead= the checklist coordinator) to ensure the key actions have been performed

Before induction of anaesthesia

(with at least nurses and anaesthetist)

- The patient identity procedure, consent?
- The operating site?
- The anaesthesia machine, medication?
- Pulse oximeter on the patient?

Does the patient have:

- Known allergy?
- Difficult airway? Aspiration risk?
(eating, drinking, G-I-disease etc.)?
- Risk of blood loss > 500 ml?
- Iv-access? Fluids planned? Blood?

Before skin incision

(with nurses, anaesthetist and surgeon)

- Confirm all team members by name and role
- Confirm the patient`s name, procedure and where the incision will be
- Has antibiotic prophylaxis been given within the last 60 minutes?

Before skin incision...

(with nurse, anaesthetist and surgeon)

Anticipated critical events?

■ To Surgeon:

- * What are the critical steps?
- * How long will the case take?
- * What are the anticipated blood loss?

Before skin incision...

(with nurse, anaesthetist and surgeon)

Anticipated critical events?

■ To Anaesthetis:

* Are there any patient-specific concerns?

Before skin incision...

(with nurse, anaesthetist and surgeon)

- To Nursing Team:
 - * Has sterility been confirmed?
 - * Are there equipment issues or any concerns?

Before patient leaves operating room (with nurses, anaesthetist and surgeon)

Nurse verbally confirms:

- The name of the procedure
- Completion of instruments, sponges and needle counts etc.
- Specimen labelling (read aloud including patient name)
- Whether there are any equipment problems to be addressed

Surgeon, Anaesthetist and Nurse:

- What are the key concerns for recovery and management of this patient?

Surgical checklist

- Works as a tool
- The operating team will discuss key plans and concerns: surgeons, anaesthetists, nurses, technicians, all operating room personal involved in operation, patient perioperative management
- Additions and modifications to **fit local practice** are encouraged (WHO, 2009)!

WHO perioperative checklists

- Patient safety!
 - * checklists reduce deaths and complications
(evidence-based scientific data)
- Inexpensive!
- Simply and quick to use!

Max Rosenheim

President of Royal College of Physicians, 1968

” I look forward to the great advances in knowledge that lie around the corner, but I do sometimes wonder wheather the vast sums of money now being spent on research might not produce more rapid and spectacular improvement in health if devoted to the application of what is already known. ”

Typical in obstetric anesthesia: the unpredictable nature of labour and delivery: emergency!

- No time to prepare the patient
(demographic and physiologic data)
- No information of medical and obstetric history
- No information of the course of labour and delivery
- No identification of common warning signs
- No blood products available
- Bad communication
- A lack of additional personal, staff more unexperienced...
(out-off-office- hours) ...

Maternal mortality

- USA (SOAP 2011, 1996-2006):
7 / 100 000 to 13,3 / 100 000
- UK (CMACE 2006-8)
13.95 – 11.39 / 100 000
- Finland: from 1980 to 2008
1.7 - 12.2 (2004) / 100 000
- Some can be **preventable...**

Maternal mortality...

- Main reasons:
 - * Peripartum hemorrhage (PH)
 - * Tromboembolism
 - * Amniotic fluid embolism
 - * Pre-eclampsia
 - * Sepsis
 - * **Anaesthesia**

Maternal mortality and anesthesia

- General anesthesia:
 - * airway / ventilation problems
 - * aspiration
- Neuraxial anaesthesia
 - high spinal: airway problem?
 - haemodynamic problem?
- **Obesity** a significant contributor to maternal death (CMACE 2011, www.thl.fi)

Maternal mortality...

- **”Human ” error and substandard care**
(CMACE 2011: 55-70 %!)
 - * communication problems
(including women of ethnic minority, recently arrived immigrants, refugees)
 - * a lack of knowledge, experience, skills
 - * a lack of preparing obstetric patients for anaesthesia and operation
 - * **lack of vital sign monitoring...**
(predelivery, during delivery, after delivery...)
= lack of recognition of clinical crisis

Vital signs monitoring...on maternity ward..delivery suite...?

- A Modified Early Warning Score = MEWS
MEOWS= a **Modified Early Obstetric Warning Score**
* identifying a **very sick obstetric patient, currently used in high risk women** (Fernando, UK):
 - including BP, HR, respiratory rate, O2 saturation, temperature, pain, responsiveness, urine output and taking into account the physiological changes of pregnancy
- May benefit outcome
- Tremendous opportunities for improvement of patient safety and research exist...
(Taenzer AH et al Anesthesiology 2011; 115: 421-31,
Roshan Fernando, SOAP 43rd 2011, Nevada)



If the parturient becomes a patient...

- **Communication and consultation: maternity health station - maternity clinic in hospital - maternity ward - delivery suite - operating room**
 - * more educational program
 - * awareness: what might happen...
- **Labour and delivery: unpredictability**
- **Be prepared (training)!**

High risk parturients

- Increasing!
- Ageing of pregnant women
- Cardiac disease
- Obesity
- Psychic problems (suicidal attempted), other lifestyle-related risk factors (drugs, alcohol, smoking, violation etc.)
- Operative deliveries induce problems to next pregnancy: placenta accreta (massive bleeding), etc.
- Other pregnancy-related problems

High risk parturients...

- **BMI increases (BMI >40 > 50 > 60)**

More airway/ventilation problems! Oxygenation!

Haemodynamics!

Difficulties in iv-access, problems in anaesthesia techniques:
regional/general anaesthesia

- **Big mother, big baby: induction of labour fails
leading to operative delivery!**

More operative deliveries

- The rate of CS increases
 - ** PH increases because of increased incidence of placental pathology (e.g. placenta accreta) due to rise in CS rate (21 % in 1997 to 35 % in 2010 and increasing further!)
- The parturient prefer CS vs. VD?
- More arrest of labour?? More complications of the normal course of labour? More induction of labour? More risk parturients?

Operative deliveries and anaesthesia

- (Junior) anaesthesiologist less skilled/less experienced in providing GA for CS ?
- Regional anaesthesia is used very commonly in obstetrics

(in Nordic Countries: spinals > 90 % in CS)

* what about learning, training of GA? (junior-senior)

General anaesthesia and maternal mortality

- Anaesthesia related complications
 7. leading cause of maternal deaths in USA and UK
 1. Difficult airway
 2. Aspiration
 3. Respiratory complications

Maternal death...

- Anesthesia-related maternal death rare but may happen

General anesthesia (GA) for CS

- True emergency operations
- High level stress situations
- Less experience vs neuraxial anesthesia
- Minimal preparation time, inadequate assessment of the patient

Back to Basics

- Clinical knowledge of pregnancy, potentially avoidable morbidity and mortality
- Good practice and skills among doctors, midwives, nurses, and other health care professionals
- Midwives: 1. must recognise the crucial importance of patient medical and obstetric history and risk status
2. consult the obstetrician, pediatrician and anesthesiologist
- Communication

Checklist to obstetric anesthesia?

- **Obstetric safety checklists**
to alert to the presence of **risk factors** that place the mother in an increased risk of complication
- Maternal safety
- Save the mother for the baby!

Checklist for obstetric patient before anesthesia

- Problems related to patient - an individual risk profile
Healthy? yes / no: what is the problem?
Medication? Allergy? BMI>40
- Problems related to pregnancy
- Problems related to the course of labour and delivery
- Aspiration? (Eating? Drinking?)
- Difficult airway? Suspicion of failed intubation?
- Iv ?
- Bleeding >1l >2l>3l or more (Hb? Tromb?)
- Blood products available?
- Vital signs if problems
* consciousness, convulsions, BP, heart rate, respiratory rate, SatO₂ , T, diuresis

Case, a parturient in danger

Monday morning, I was at the induction of elective anesthesia, did not know who else were at work, and what I heard:

- Emergency CS! Midwife: Healthy primipara...
- The senior obstetrician: severe fetal bradycardia, the baby must be delivered at once, difficulties...
- What I saw: pale, lean pregnant woman, with iv, calm...and asking: how are you? Telling something what is going on...and can you open your mouth...and: she could open her mouth only 2 cm...
- Mask 100% oxygen, saturation 100 %, rapid-sequence induction of GA

Case 1..

- Mouth did not open at all.. Like a stone..teeth together.. Face muscles hard...prolonged effect of succinylcholine (the dose of 100 mg) ?? Call for help...at once!
- Saturation decreased 100-75- 0%? Mask ventilation! Blue face... ECG - changes, maternal bradycardia 145-90-72, adrenaline iv!
- The decision: soon maternal resuscitation... so: deliver the baby!
- Minutes were going...

Case 1..

- The patient turned gray...and the muscles relaxed...and successful placing of LMA, ventilation ok, saturation started to rise... ad 100%!!
- Happy end!
- But afterwards: The parturient had been in our maternity ward > 24 h and no one had checked her medical history of juvenile rheumatoid arthritis with cervical problems and reduced mouth opening etc.

Case 1...

- In this case, if having antenatal information :
an elective CS under regional anaesthesia
- Guidelines for antenatal care (ACOG)
- ** Parturients with the suspicion of difficult intubation (being in a high risk of hazardous emergency!!) should be sent to antenatal anaesthesia consultation!

Team work for patient safety!



References

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