

Handling of internal herniation after gastric bypass surgery in late pregnancy



Lars Møller Pedersen
Hvidovre Hospital 2015

Hvidovre Hospital



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Hvidovre Hospital 2015

Obstetric Anaesthesia

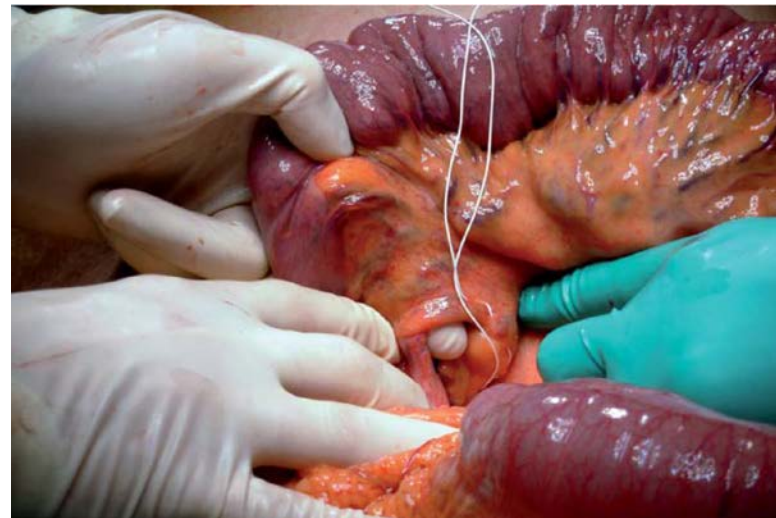
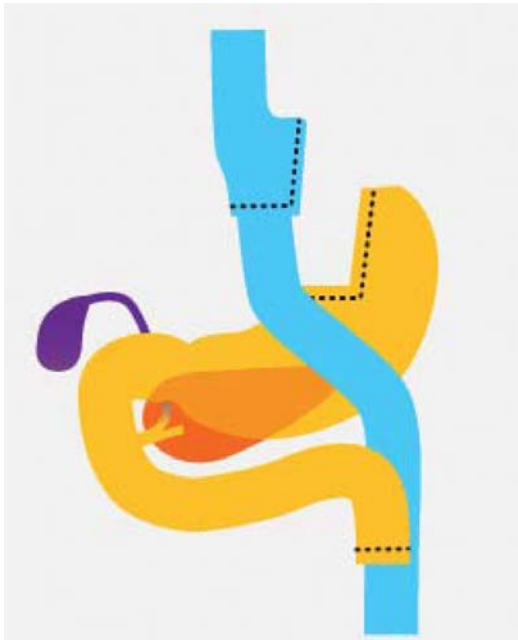
Hvidovre Hospital

- 7115 births
- 1708 epidurals for vaginal birth
- 1664 caesarean sections
- 48 grade 1 emergency CS (15 min)
- 336 grade 2 emergency CS (30 min)

Internal herniation and acute CS

- Internal herniation with small bowel obstruction is a complication to gastric bypass surgery
- In combination with late pregnancy:
 - CS + operative repair may be indicated
- Anaesthesia???
 - we use neuroaxial

Internal herniation after gastric bypass surgery



Two conditions, one patient

Neuroaxial anaesthesia



Airway
Aspiration
Reduced FRC
Increased oxygen consumption
Fetus

General anaesthesia (epidural analgesia)



High mortality
Circulatory instability
Sepsis
MODS

Aspiration

” a cerebral event”

Complications in OB anaesthesia

Table 4. Incidence of Serious Complications*

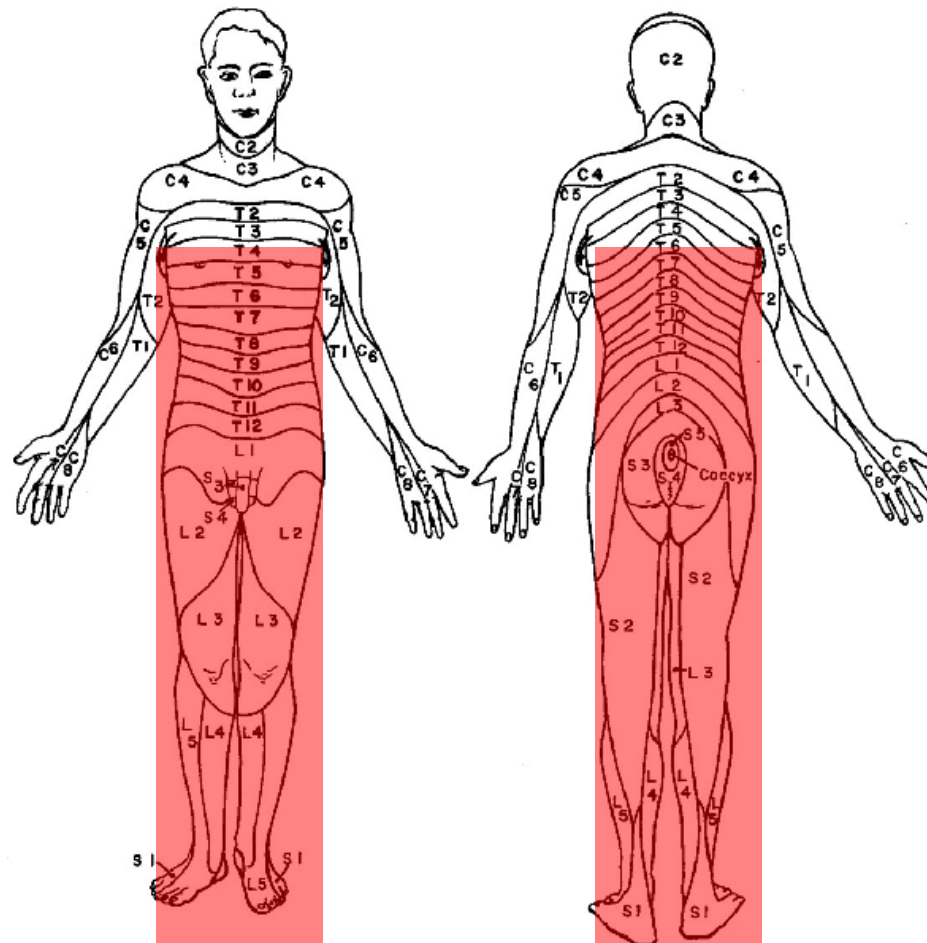
| Serious Complication | Totals | Incidence | 95% CI | Anesthesia Related | Incidence | 95% CI |
|-----------------------------------|--------|-----------|-----------------------|--------------------|-----------|------------------------|
| Maternal death | 30 | 1:10,250 | 1:7,180, 1:15,192 | 0 | | |
| Cardiac arrest | 43† | 1:7,151 | 1:5,319, 1:9,615 | 2 | 1:128,398 | 1:35,544, 1:1,060,218 |
| Myocardial infarction | 2 | 1:153,748 | 1:42,562, 1:1,269,541 | 2 | 1:128,398 | 1:35,544, 1:1,060,218 |
| Epidural abscess/meningitis | 4 | | | 4 | 1:62,866 | 1:25,074, 1:235,620 |
| Epidural hematoma | 1 | | | 1 | 1:251,463 | 1:46,090, 1:10,142,861 |
| Serious neurologic injury | 27 | 1:11,389 | 1:7,828, 1:17,281 | 7 | 1:35,923 | 1:17,805, 1:91,244 |
| Aspiration | 0 | | | 0 | | |
| Failed intubation | 10 | | | 10 | 1:533 | 1:290, 1:971 |
| High neuraxial block | 58 | | | 58‡ | 1:4,336 | 1:3,356, 1:5,587 |
| Anaphylaxis | 5§ | 1:61,499 | 1:26,353, 1:189,403 | 0 | | |
| Respiratory arrest in labor suite | 25 | 1:8,455 | 1:5,714, 1:12,500 | 16 | 1:10,042 | 1:6,172, 1:16,131 |
| Unrecognized spinal catheter | 14 | | | 14 | 1:15,435 | 1:9,176, 1:25,634 |
| Total | 157 | 1:1,959 | 1:1,675, 1:2,294 | 85# | 1:3,021 | 1:2,443, 1:3,782 |

D'Angelo et al. Anesthesiology 2014;120: 1505-12

Spinal anaesthesia

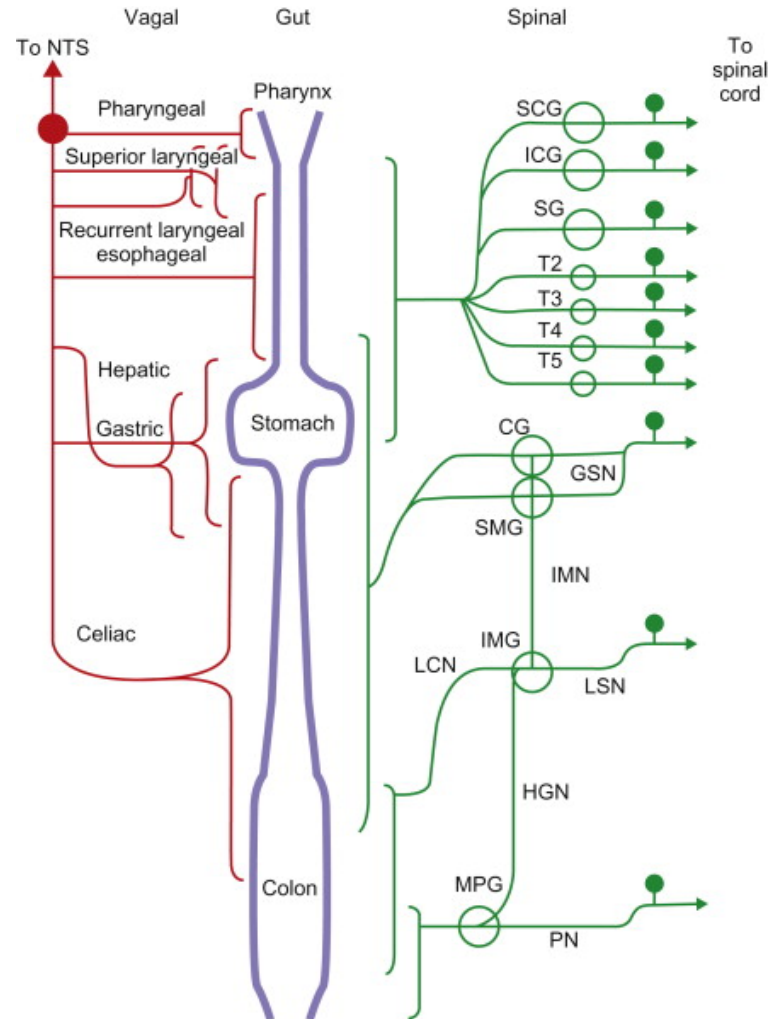
| | |
|--------------------------------|----------|
| Hyperbaric bupivacaine 5 mg/ml | 10 mg |
| Sufentanil 5 micg/ml | 2.5 micg |
| Morphine 0.4 mg/ml | 0.1 mg |
| | |
| Total volume | 2.75 ml |

Coverage



Upper GI innervation

- Vagus afferents: mechanosensitive ion channels
- Greater splanchnic nerve: Mechanoreceptors

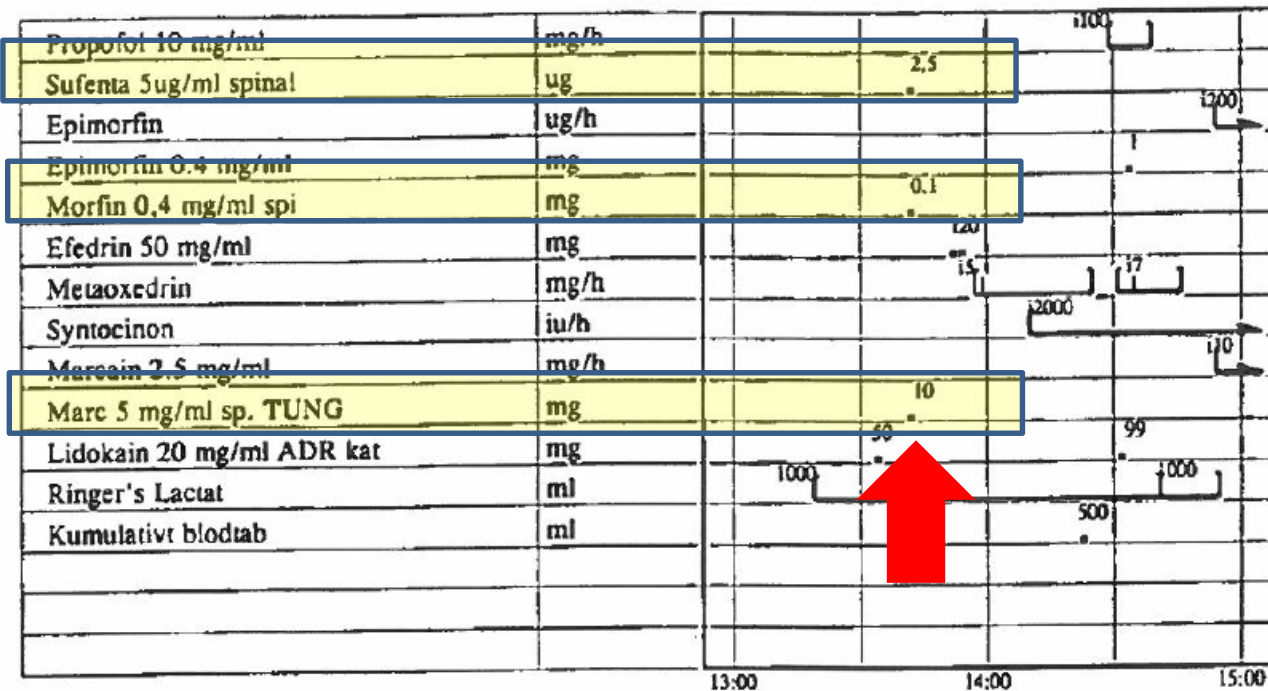


11 patients

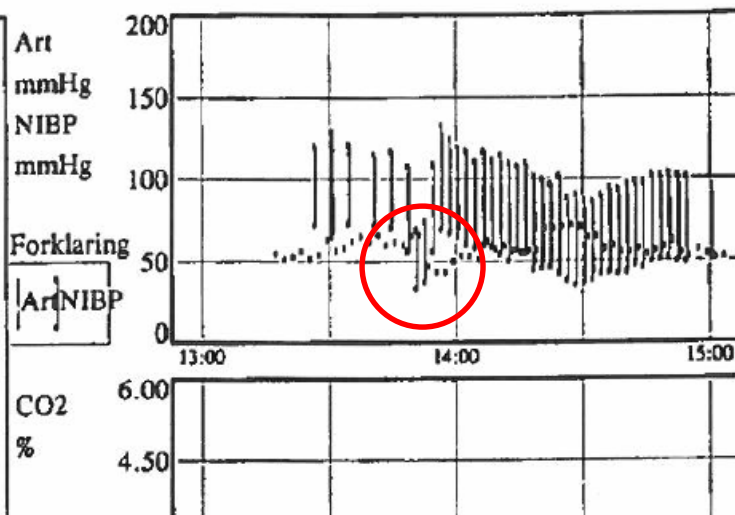
| | Neuroaxial: 7 | General: 4 |
|--------------------|---------------|------------|
| Age (years) | 30 ± 5 | 28 ± 4 |
| Parity | 0 (0 - 2) | 1 (0 - 1) |
| BMI | 30 ± 4 | 32 ± 4 |
| ASA | 2 | 2 |
| Surgery time (min) | 55 ± 12 | 68 ± 31 |

Age, BMI, surgery time: mean ± SD

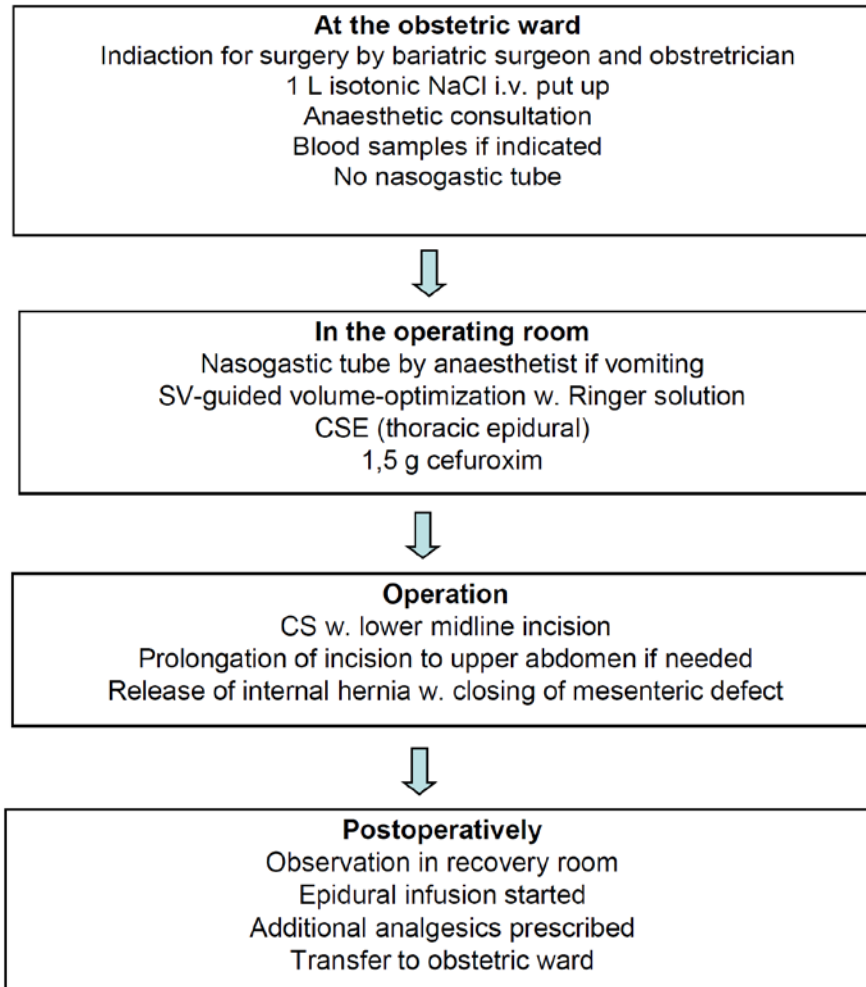
Parity and ASA: median (range)



13:12 > Patient på stue
 13:12 Spontan ventilation (*)
 13:12 Vandret rygleje
 13:12 IV adgang 1 Størrelse:20g
 Ind:Vhånd
 13:15 IV adgang 2 Størrelse:20g
 Ind:Halbue
 13:26 Cefuroxim 1.5g (") 1.5g
 13:41 Spinal analgesi Pat.
 position:h.side Lokal Anal.:Ja
 Niveau:L3-4 Teknik:Med.
 Nålestørrelse:G27 Glat
 indføring:Ja Klar liquor:Ja
 Nåletvøb:stump



Surgical team flowchart



Lessons learned

- Neuroaxial anaesthesia is possible
- Corporation needed: patient
- Corporation needed: surgeon
- Hypovolemia