

## THE IMPACT OF SPINAL ANAESTHESIA ON URINARY BLADDER SENSATION FOLLOWING ELECTIVE CAESAREAN SECTION.

### Hypothesis / aims of study

1. To determine the time for sensation to return in the urinary bladder after spinal anaesthesia in patients having elective Caesarean sections.
2. To determine the volume of urine present in the urinary bladder at time of first sensation and whether it is a good predictor of time of first sensation.
3. To determine the post-residual volume of urine in the bladder 24 hours after removal of the urinary catheter.

### Study design, materials and methods

Patients undergoing elective Caesarean sections were approached in the pre operative clerking clinics. The inclusion criteria:

- Patients undergoing elective Caesarean section
- Patients having spinal anaesthesia.

The exclusion criteria:

- Patients who had a contraindication to having their catheters clamped (e.g.: bladder trauma at Caesarean section)
- Patients having symptoms of a urinary tract infection.

The patient's catheters were clamped for three hour interval(s) following the Caesarean section, and an interim ultrasound scan of the bladder was done to ensure overdistention did not occur. The clamp was released if estimated urine volumes on ultrasound went beyond 450 mls. The time taken for the patients to regain their first desire to void was recorded as well as the volume present in the bladder at this time and the total volume of urine passed. Twenty four hours after removal of the catheter the patients had an ultrasound of the bladder to determine the post void residual volume.

### Results

Thirty patients consented for the study. The spinal needle was inserted at level L2/3 in 2 patients, L3/4 in 22 patients and L4/5 in 6 patients. The indications for the Caesarean sections were: Previous Caesarean Section (18), Breech Presentation (7), Twins (1), Placenta Previa (1) and others (3). There were 5 primigravid patients.

Table:1

	Median Value	Range of values
Age ( years)	31.5	24 - 41
Parity	1	0 - 4
Volume of 0.5% Bupivacaine used (mls)	2.5	2.3 – 2.7
Time for sensation of bladder to return	6 hrs 11 min	2 hrs 52 min – 10 hrs 32 min
Volume of urine present in the bladder at time of first sensation ( mls)	142	56 – 518
Volume of urine passed before return of sensation ( mls)	478	115 – 2755
Post residual volume 24 hrs after removal of the catheter ( mls)	12.5	5 - 67

The median time taken for sensation to return to the bladder was 6 hours 11 minutes (range 2 hrs 52 min – 10 hrs 32 min, lower quartile 5 hrs 2min, upper quartile 8 hours 2 min.) after delivery. The median volume of urine present in the bladder at time of sensation was 143mls (lower quartile 99 mls upper quartile 278 mls). The median total production of urine produced between delivery and time for sensation to return was 478 mls ( lower quartile 224 mls , upper quartile 638 mls) with a median post residual volume of 12.5mls (lower quartile 9.5 mls , upper quartile 33 mls ).

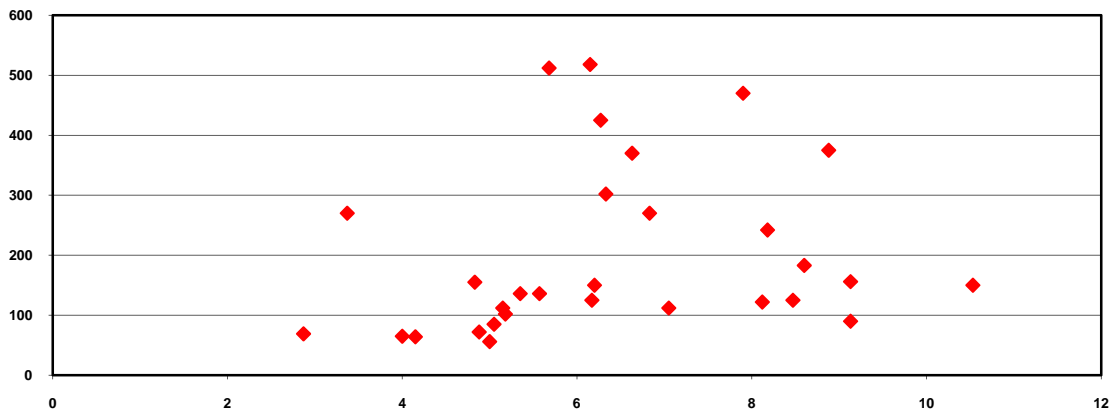


Figure 1

Volume of urine present in the bladder at first sensation to void (mls) versus Time at which first sensation to void occurs (hours)

Interpretation of results

- Bladder sensation can take over 10 hours to return after spinal anaesthesia.
- The volume of urine present at first sensation is far less than the total amount of urine passed before sensation returns with a high risk of overdistension occurring.
- Volume present in the bladder at first sensation is not a good predictor of the time taken for sensation to occur.
- However the incidence of urine retention 24 hours after removal of the catheter is low.

Concluding message

It would seem that an in dwelling catheter should remain for at least 11 hours after spinal anaesthesia for an elective Caesarean section

References

1. Neurourol Urodyn (1987); 6: 235-237.

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**HUMAN SUBJECTS:** This study was approved by the Worcestershire and Hereford Ethics Committee - U.K and followed the Declaration of Helsinki Informed consent was obtained from the patients.