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UNCHARTED TERRITORY: ANAESTHESIA AND THE URINARY BLADDER AFTER DELIVERY.

Hypothesis / aims of study

Delivery is a time when women are at risk of bladder injury secondary to the loss of bladder sensation. Contributing factors include nerve damage associated with childbirth and also anaesthesia. There is a paucity of literature that addresses this issue especially with modern anaesthetic techniques such as patient controlled epidural anaesthesia (PCEA). With this in mind this study investigated the effect of anaesthesia on the bladder with regards to:

- time taken for sensation to return to the bladder after various of anaesthesia
- volume of urine present in the bladder when sensation returns
- explore how time and volume are correlated.

Study design, materials and methods

Women were recruited antenatally. Women with indwelling catheters had their catheters clamped following delivery, allowing their bladders to fill spontaneously.

The time taken for women to regain their first desire to void was recorded. The volume of urine present in the bladder at this time was measured by ultrasound estimation where no catheter was present or by releasing the catheter clamp and measuring the urine expelled in patients with an indwelling catheter.

Results

Table 1:

	Vaginal deliveries without epidurals (n= 40) Median with range	Vaginal deliveries with epidurals (PCEA) (n=24) Median with range	Caesarean Section with Spinal anaesthesia (n= 44) Median with range
Time bladder sensation to return (min)	120 (46 –397)	276 (95 – 423)	371 (172 – 692)
Median volume of urine at first sensation (mls)	180 (42 – 631)	200 (74 – 600)	152.5 (56 – 518)

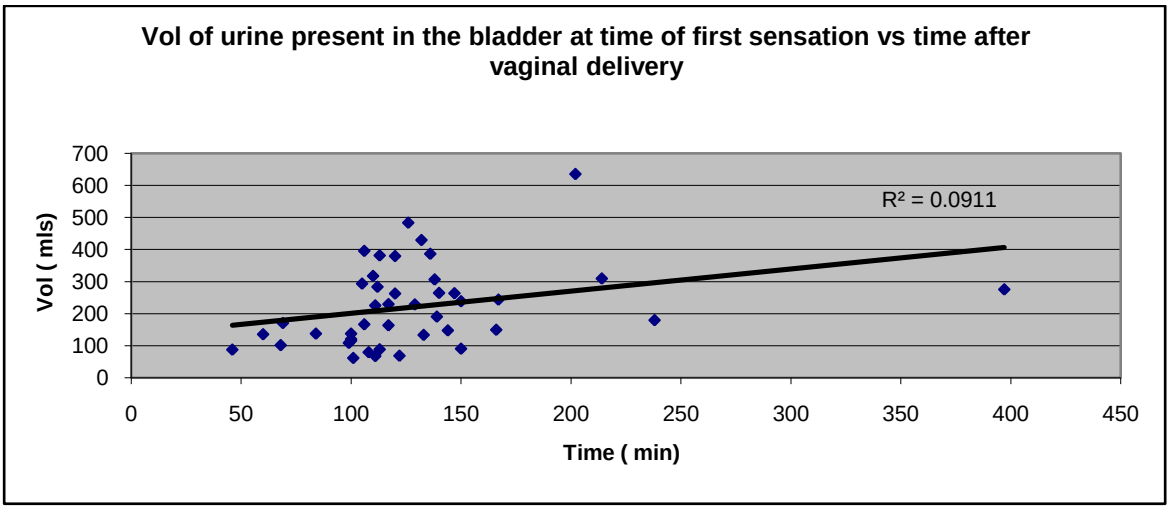

Figure 1

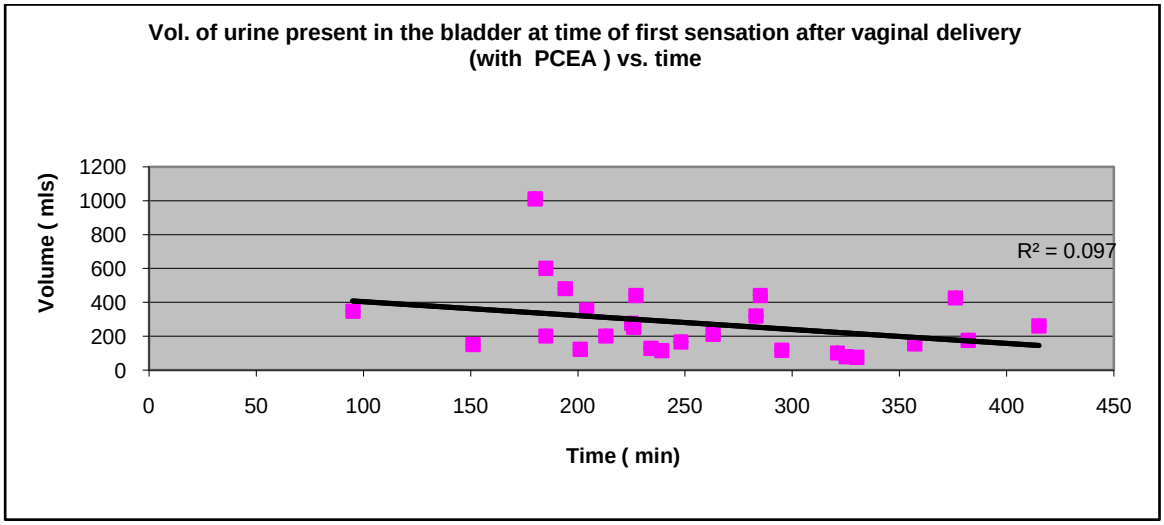

Figure 2

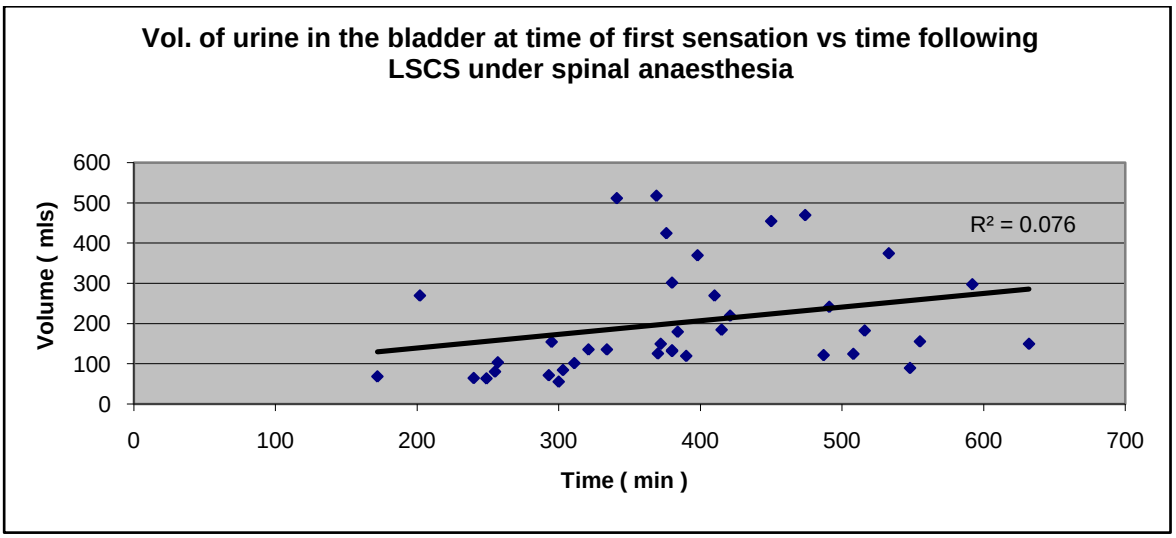

Figure 3

Interpretation of results

Bladder sensation may take over 10 hours to return following Caesarean section under spinal anaesthesia, over 6 hours following vaginal deliveries and following vaginal deliveries after epidurals (PCEA). There is a weak correlation between time taken for sensation in the bladder to return and volume of urine in the bladder after vaginal delivery, vaginal delivery with PCEA and Caesarean section with spinal anaesthesia. The negative correlation between volume present in the bladder and time for sensation to return in the patients having PCEA might be as a result of the urine concentration. It therefore seems to be more a function to time rather than volume that may determine when sensation returns. Overall we are unable to demonstrate a reliable correlation with volume.

Concluding message

Bladder sensation appears to be an all or nothing phenomenon and not a weak relation to volume. This paper to the best of our knowledge is the first in the last 10 years to present data on bladder sensation after childbirth. It therefore presents new data on modern anaesthetics and suggests that in the absence of catheterization following delivery protocols should have a cut-off time after which catheterization would be highly recommended (e.g.: 150 min after vaginal delivery)

Specify source of funding or grant	**Birmingham Women's Health NHS Trust**
Is this a clinical trial?	**Yes**
Is this study registered in a public clinical trials registry?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**Hereford and Worcester Research Ethics Committee**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**