ORIGINAL ARTICLE

Comparison of Frequency of Success in Identification of Etradural Space by LOR Technique with air and Saline During Etradural Anaesthesia in Lower Segment Caesarean Section

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ABSTRACT
This study was conducted to compare the frequency of success in identifying etradural space by LOR technique (LOR) with air or saline during etradural anaesthesia in lower segment caesarean section.
Method: In this experimental study, 70 patients of ASA I and II of age 18-40 years, undergoing caesarean section were selected and divided in 2 groups, In Group A, 3ml of Air & in Group B 3ml of Saline was used respectively for the localization of etradural space by LOR technique method.
Conclusion: It was concluded that for the identification of etradural space, Saline has the minimum unblocked segments and complications as compared to Air.

Keywords: Etradural Anaesthesia, Caesarean Section. Resistance,

INTRODUCTION
With development in mother and fetus care, the rate of caesarean delivery of fetus has increased in developing countries[1]. Similarly, different anaesthetic techniques including general, regional and local, have also been evolved in practice. It is important for medical personnel and general public to know the cons & pros of different methods/techniques of anaesthesia[2]. Regional anaesthesia is mostly safer than general anaesthesia (GA) because risk of failed intubation & aspiration of gastric contents are refrained. Among the regional techniques, etradural anaesthesia is always preferred instead of spinal anaesthesia (SA) due to gradual fall in blood pressure, option to give additional bolus for anaesthesia or analgesia and most importantly ability to provide post-operative analgesia and no risk for PDPH.etraduralcatheter placement requires more skill and time[3] and is related with certain complications including inadvertent intravascular injection or dural puncture and unblocked segments.

Lumbar etradural analgesia is the best option for infra umbilical and lower limb surgeries[4]. etradural space is identified by LOR technique (LOR), so that any change in compliance is detected by injection of air or saline, as the tip of etradural needle crosses ligamentum flavum and approaches at etradural space[5]. The choice of using air or saline has their defenders and refuters[6].

A study shows a lower but statistically increase in the number of attempts required to identify the etradural space i.e. Air 29% as compared to saline 19%[5].

Another study claims that pre-distension of etradural space is related with lower chances of intravascular catheter placement by the use of 5ml of saline (2% vs 16% in non distension group) and fewer unblocked segments (9% vs 33% in non-distension group[7,8].

In recent times systematic review of randomized control trials evaluating different techniques to counter intravascular placement confirmed that fluid injection before catheter placement was related with minimum chances of intravascular catheter placement[9].

The obstetric units of Sir Ganga Ram Hospital are among the busiest units in Lahore where 25 to 35 caesarean sections are performed daily, under different types of anaesthesia, mainly under regional techniques. During etradural placement of catheter, air is mostly injected to identify etradural space, which may result in more chances of unblocked segments. This study is planned to compare both techniques to identify etradural space so that chances of complete segmental block in parturients may be increased.

MATERIAL AND METHODS

Study Design: Randomized controlled trial.
Setting: Department of Obstetric and Gynaecology operation theatre, Sir Ganga Ram Hospital, Lahore.

Sample size:
Total 70 patients were included in this group.
Group A: LOR technique with Air (35 patients).
Group B: LOR technique with Saline (35 patients) .
Sample size is of 70 cases (35 in each group) was calculated as 80% power of test, 5% level of significance and by taking percentage of success in terms of complete segments of block in both groups i.e. 91% in Saline group and 67% in air group in identifying etradural space in lower segment caesarean section.

Sampling Technique
Non-probability, purposive sampling

Sample Selection
Inclusion Criteria
- 18 to 40 years of age.
- Parturients of ASA grade-I and II (attached as annexure A).
- Parturients with singleton pregnancy (assessed on antenatal record) planned to undergo elective lower segment caesarean section under etradural anaesthesia (with complete antenatal record).

Exclusion Criteria:
- Patient's refusal
- Deformities of spine (previous surgeries or trauma to lumbar spine, kyphoscollosis) assessed on clinical examination.
- Local sepsis (redness or apparent abscess (infection) over lumbar area) assessed on clinical examination.

2. Overweight or Morbid obesity (body mass index more than 40 kg/m^2).
3. Eclampsia (BP >150/90 mmHg + proteinuria i.e urinary protein >500mg/24 hours + presence of seizures).
4. Placenta praevia type III, IV, (on antenatal record) and antepartum haemorrhage (on clinical examination).
5. Severe stenotic valvular heart disease (on antenatal record).
6. If blood or CSF was aspirated from the needle or etradural catheter during placement then procedure was abandoned

Data Analysis
- SPSS version 11.0 software was used for the analysis of the Data
- Descriptive statistics was used for Analysis.
- Age was presented in the form of mean±standard deviation.
- Success in terms of complete segmental block) was presented in the form of frequency and percentage.
- For the comparison of the frequency of success (complete segmental block) in both groups Chi-square test was used.
- P value < 0.05 was considered as significant.

RESULTS

This study was conducted a period of six months from 01-01-2016to 30-06-2016. A total of 70 cases were included in this study (35 in each group).

Regarding age distribution of patients, in group-A, 4 patients (11.4%) and in group-B, 5 patients (14.3%) were < 20 years of age. In group-A, 22 patients (62.9%) and in group-B 23 patients (65.7%) were 20-30 years old while 31-40 years old patients were 9 (25.7%) from group-A and 7 (20.0%) from group-B. Mean age of the patients was 24.9±3.5 in Group A and 25.1±4.2 in Group B. (Table-1).

Table-1: Distribution of cases by age

Age (Year)	Group-A LOR technique (LOR) with air		Group-B LOR technique (LOR) with saline	
	No.	%	No.	%
< 20	04	11.4	05	14.3
20-30	22	62.9	23	65.7
31-40	09	25.7	07	20.0
Total	**35**	**100.0**	**35**	**100.0**
Mean±SD	**24.9±3.5**		**25.1±4.2**	

Table-2: Distribution of cases by complete segmental block

With complete segmental block	Group-A LOR technique (LOR) with air		Group-B LOR technique (LOR) with saline	
	No.	%	No.	%
Yes	24	68.6	32	91.4
No	11	31.4	03	08.6
Total	**35**	**100.0**	**35**	**100.0**

Table-3: Distribution of cases by success

Success	Group-A LOR technique (LOR) with air		Group-B LOR technique (LOR) with saline	
	No.	%	No.	%
Yes	24	68.6	32	91.4
No	11	31.4	03	08.6
Total	**35**	**100.0**	**35**	**100.0**

Chi Square= 5.71
df=1
PValue=0.016

In group-A 24 patients (68.6%) and in group-B 32 patients (91.4%) were with complete segmental block (Table-2).

Success was obtained in 24 patients (68.6%) of group-A and 32 patients (91.4%) of group-B (Table-3).

The differences between two groups were statistically significant with p vale 0.016.

DISCUSSION

Etraduralanaesthesia is a very well known technique since the last century. Identification of the etradural space is always a matter of crucial importance[10].

Use of Air & Saline for the LOR technique techniques are very well known and have pros & cons. Saline technique has advantage over Air technique as the LOR technique technique with air have several negative side effects. In comparison with Saline (0.3%-0.4%) dural puncture rate of air is 2%, which is quite high.[11]

In my study, LOR technique with 3 mL of air was related with many difficulties in etradural catheter placement, more unblocked etradural segments, and increased frequency of intravascular catheter placement and dural puncture than when 3 mL of saline was used to identify the etradural space.

Results of current study were in parallel with those of Beilin et al[12] and Valentine et al[13]. Both reported that the LOR technique with small amounts of saline was advantageous to using the same amount of air.

The choice of the currently used LOR techniques for localization of the etradural space with air/saline is mostly depends upon the anaesthesiologist's personal experience and preference. Among surveyed 404 obstetric anaesthesiologists[14], in start 59% opted for air for LOR technique technique, but in the end only 37% are currently using this technique. 53% are using saline technique, and 6% are using both techniques. 23% had changed their technique from air LOR to saline LOR, & only 4% had opted to Air from Saline. A recent study concluded that the literature supports the use Saline LOR Technique not only because of good analgesia, but also for the lower chances of morbidity[15]. Liquids are incompressible, the transition from total resistance to LOR technique is more evident; due to this reason liquids are always ideal for performance of needle placement into the etradural space with the LOR technique[15].

In a trial study involving 547 women, Evron et al. described a 16% chances of difficult placement of etradural catheter by using LOR with air technique, & in patients treated with Saline LOR technique only 4% had a difficult catheter placement[16].

Evron et al. also described that with air there are more chances of accidental intravascular placements of the etradural catheter [16]. This was however not confirmed by Beilin et al. and Sarna et al.[12,17]

Beilin et al. and Sarna et al. were also unable to find a difference between patients treated with saline or patients treated with air in the chances of

paresthesias during etradural catheter placement[12,17].

CONCLUSION

In conclusion of this study, this Saline LOR technique may be especially helpful in difficult & strenuous etradural blocks. Our results reveal a reduced chances of unblocked segments and fewer complications with use of saline comparatively to air for identifying the etradural space.

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