The effect of epidural analgesia on prolong labor and increase the risk of instrumental delivery and cesarean delivery in compare with normal vaginal delivery without intervention

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تأثير تخدير الولادة بدون ألم على إطالة أمد المخاض وزيادة خطر الولادة باستخدام الملقط والشفاط وزيادة معدل الولادة القيصرية مقارنة بالولادة المهبلية الطبيعية

الملخص:

أهمية الدراسة: لتوفير معلومات حول استخدام التخدير في الطبقة فوق الجافية لتخفيف الألم أثناء الولادة والآثار الجانبية والمضاعفات التي قد تسببها هذه التقنيات مقارنة بالولادة المهبلية الطبيعية دون تدخل.

الموضوع وطرق البحث: هذه الدراسة مقارنة بين حالات عشوائية شملت 40 امرأة مقسمة إلى مجموعتين حسب طبيعة الولادة، مجموعة خضعت لتقنية التخدير فوق الجافية وهي ما يعرف بالولادة دون ألم أثناء الولادة في مستشفى زليتن المركزي والمجموعة الأخرى خضعت للولادة الطبيعية دون تدخل. حيث تم المقارنة بين التأثيرات والمضاعفات التي حدثت أثناء وبعد الولادة لكل من الأم والمولود.

النتائج: أجريت الدراسة على 40 امرأة أثناء الولادة مقسمة إلى عشرين حالة (مجموعة الدراسة) تم اخضاعهن للمسكن فوق الجافية ما يعرف بالولادة دون ألم أثناء الولادة المهبلية، وعشرين أخرى (المجموعة الضابطة) مع الولادة المهبلية الطبيعية دون تدخل وتمت مطابقتها للدراسة مجموعة.

توصية: نوصي باستخدام حجم كبير من العينة للحصول على مزيد من المعلومات، كما يجب أيضًا شرح وتوضيح كل المضعفات المحتملة على الأم والجنين.

الكلمات المفتاحية: *الولادة المهبلية الطبيعية، التسكين فوق الجافية والولادة بدون ألم، الولادة بالأدوات المساعدة.*

Abstract:

Background : to provide information about the use of epidural anesthesia to relived pain during delivery and side effect and complication may be causing by this techniques in compare with normal vaginal delivery without intervention.

subject and methods: this is a comparative study between a randomized cases involving 40 women divided into two groups according delivery technique, a group undergoed to epidural anesthesia technique during delivery in Aljoma hospital in zliten city and other undergoed to normal delivery without intervention in same place , where compared between effects and complications which occurred during and after this procedure.

Result: The study was carried out on 40 women who attended the obstetric department which divided to twenty case (study group) were presented with epidural analgesia used during vaginal delivery ,and twenty others (control group) with normal vaginal delivery without intervention were matched to the study group.

Recommendation: recommend to use large size of sample.

Keywords: *Normal vaginal delivery ,epidural analgesia ,time of labor ,instrumental delivery ,cesarean section .*

Introduction:

Anesthesia is temporary loss of consciousness and gives amnesia, is important to complete surgery and relieve pain, divided to many types which can be used in different operation (Rehak & Watterson, 2020). General anesthesia is a medically induced coma with loss of protective reflexes, resulting from the administration of one or more general anesthetic agents (Rehak & Watterson, 2020).

Regional anesthesia is more used in surgery which require spinal or epidural anesthesia especially in cesarean delivery (Bajwa & Kulshrestha, 2016; Maranhao, 2021).

Epidural anesthesiais technique whereby a local anesthetic drug is injected through a catheter placed into the epidural space. This technique is similar to spinal anesthesia as both are neuraxial (Anim-Somuah et al, 2018; Kingsley, & McGlennan, 2019).

An epidural is more useful technique which injection local anesthetic in epidural space and is useful for relieved pain in postoperative (Alakeely et al, 2018; Brown et al., 2018).

The pain caused by labor is far more intense than pain from other causes Epidural analgesia is an effective pharmacological technique used to manage labor pain. It involves the injection of an anesthetic into the lower back to decrease the sensation of pain felt during labor, Although epidural analgesia may increase the risk of instrumental delivery, it is not associated with increasing risk of caesarean section (Kingsley, & McGlennan, 2019).

Epidural labor analgesia is the gold standard method with no evidence of harm to the neonate, but beneficial effect has been observed (Alakeely et al, 2018).

It effectively relieves pain during labor and delivery. However, controversy exists about the effect of epidural anesthesia on the progression of labor, the mode of delivery, and the effects on the fetus and newborn (Agrawal et al, 2014).

Aim of study:

The provide information about the use of epidural anesthesia to relived pain during delivery and side effect and complication may be caused by this techniques in compare with normal vaginal delivery without intervention.

Objective:

General objective:

To determine the rate use of the epidural analgesia during labor and effect this techniques.

Specific objective:

To knowledge safety of epidural anesthesia on pregnancy during delivery and avoid of complication of this techniques.

Research problem:

How relieved pain by epidural analgesia and avoid side effect of epidural and how decrease incidence complication.

Subjects & methods:

Type of Study: This study was comparative study.

Place and period of study: The study was carried out on 40 women who attended the obstetric department of zliten hospital in Zliten city ,the study performed from April 2022 to june 2023. Written informed consent for all the participants after explained the details of study.

- twenty case (study group) were presented with epidural analgesia used during vaginal delivery.
- twenty others (control group) with normal vaginal delivery without intervention were matched to the study group.

Inclusion criteria: pregnant female with labor pain

Exclusion criteria:

1-pregnant women with low blood pressure.
2 –inflammation at site of procedure.
3-uncontrolled diabetes mellitus.
4-bleeding diathesis.

Statistical analysis: The Statistical data analyzed was carried out on computer statistics.

Result:

The study was carried out on 40 women who attended the obstetric department which divided to twenty case (study group) were presented with epidural analgesia used during vaginal delivery ,and twenty others (control group) with normal vaginal delivery without intervention were matched to the study group.

1-Demographic characteristics:

A-distribution of sample individuals according to:

Age groups:

Table (1) Repetitive distribution and percentage of sample individuals on the basis of Age.

Age groups		Epidural analgesia	Normal delivery	Total
From 19 to 24 years	Count	10	9	19
	Percent	52.6	47.4	100.0
From 25 to 30 years	Count	6	8	14
	Percent %	42.9	57.1	100.0
From 31 to 35 years	Count	4	3	7
	Percent %	57.1	42.9	100.0
Total	Count	20	20	40
	Percent %	50.0	50.0	100.0

The results shows the most age use epidural analgesia (From 31 to 35 years) was (57.1%), and most age delivered normaly (From 25 to 30 years) was (57.1%).

Number of children:

Table (2) Repetitive distribution and percentage of sample individuals based on number children.

Number of children		Epidural analgesia	Normal delivery	Total
From three or less	Count	16	15	31
	Percent %	51.6	48.4	100
From (4) to (6)	Count	4	5	9
	Percent %	44.4	55.6	100
Total	Count	20	20	40
	Percent %	50	50	100

The table shows the pregnancy have highest number from children delivered by normal delivery was (55.6%) and the number of children delivered by use epidural analgesia is low **(**51.6**%)**

Blood group:

Table (3) Repetitive distribution and percentage of sample individuals based on blood group.

Blood group		Epidural analgesia	Normal delivery	Total
A+	Count	4	4	8
	Percent %	50	50	100
A-	Count	2	3	5
	Percent %	40	60	100
B+	Count	4	2	6
	Percent %	66.7	33.3	100
B-	Count	2	1	3
	Percent %	66.7	33.3	100
AB+	Count	4	2	6
	Percent %	66.7	33.3	100
AB-	Count	1	1	2
	Percent %	50	50	100
O+	Count	2	6	8
	Percent %	25	75	100
O-	Count	1	1	2
	Percent %	50	50	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following.

1-The highest percentage in Epidural analgesia - Normal delivery is (A+) (50%)

2-The highest percentage in Normal delivery (A-) was (60%).

3-The highest percentage in in Epidural analgesia (B+) was (66.7%)

4-The highest percentage in Epidural analgesia (B-) was (66.7%).

5-The highest percentage in Epidural analgesia (AB+) was (66.7%).

6-The highest percentage in Epidural analgesia - Normal delivery (AB-) was (50%).

Pregnancy related diseases:

Table (4) Repetitive distribution and percentage of sample individuals based on pregnancy disease.

Pregnancy related diseases		Epidural analgesia	Normal delivery	Total
No	Count	20	17	37
	Percent %	54.1	45.9	100
Yes	Count	0	3	3
	Percent %	0	100	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following:

1-The highest percentage for pregnancy related disease in Epidural analgesia (No) was (54.1%)

2-The highest percentage for pregnancy have in Normal delivery (Yes) was (100%)

Exposed to smoke:

Table (5) repetitive distribution and percentage of sample individuals for smoking.

exposed to smoke		Epidural analgesia	Normal delivery	Total
No	Count	12	7	19
	Percent %	63.2	36.8	100
Yes	Count	8	13	21
	Percent %	38.1	61.9	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following:

1-The highest percentage in Epidural analgesia which pregnancy exposed to smoking (No) was (63.2%).

2-The highest percentage in Normal delivery (Yes) was (61.9%).

B-History of pregnancy:

1-the family history have chronic disease:

Table (6) Repetitive distribution and percentage of sample individuals for history family chronic disease.

The family history have chronic disease		Epidural analgesia	Normal delivery	Total
No	Count	14	13	27
	Percent %	51.9	48.1	100
DM	Count	2	3	5
	Percent %	40	60	100
HTN	Count	3	2	5
	Percent %	60	40	100
ASHMA	Count	1	2	3
	Percent %	33.3	66.7	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following.

1-The highest percentage in Epidural analgesia (NO) have disese was (51.9%)

2-The highest percentage in Normal delivery have pregnancy (DM) was (60%).

3-The highest percentage patients use Epidural analgesia have (HTN) was (60%).

4-The highest percentage in Normal delivery the patients have (ASHMA) was (66.7%).

2-The family have a person with congenital anomalies:

Table (7) Repetitive distribution and percentage of sample individuals for The family have a person with congenital anomalies**.**

The family have a person with congenital anomalies		Epidural analgesia	Normal delivery	Total
No	Count	20	19	39
	Percent %	51.3	48.7	100
Yes	Count	0	1	1
	Percent %	0	100	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following.

1. The highest percentage in Epidural analgesia (No) have congenital anomalies was (51.3%)
2. The highest percentage in category (Yes) was (100%) in (Normal delivery).

3-Have any surgical procedure done before:

Table (8) Repetitive distribution and percentage of sample individuals for history surgical procedure done before.

Have any surgical procedure done before		Epidural analgesia	Normal delivery	Total
No	Count	16	13	29
	Percent %	55.2	44.8	100
Yes	Count	4	7	11
	Percent %	36.4	63.6	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following.

1-The highest percentage in Epidural analgesia (No) have surgical procedure done before was (55.2%).

2-The highest percentage in Normal delivery (Yes) was have surgical procedure done before (63.6%).

4- The family history have allergic to drug:

Table (9) Repetitive distribution and percentage of sample individuals for the family history have allergic to drug.

Are you allergic to any type of medicine		Epidural analgesia	Normal delivery	Total
NO	Count	20	15	35
	Percent %	57.1	42.9	100
Yes	Count	0	5	5
	Percent %	0	100	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following.

1-The highest percentage in Epidural analgesia (No) have allergies (57.1%).

2-The highest percentage in Normal delivery (Yes) was have allergies (100%).

C- Normal delivery and epidural analgesia during delivery:

1- Complications:

a- Rise in temperature (hyperthermia):

Table (10) Repetitive distribution and percentage of sample individuals for hyperthermia.

Rise in temperature (hyperthermia)		Epidural analgesia	Normal delivery	Total
No	Count	20	15	35
	Percent %	57.1	42.9	100
Yes	Count	0	5	5
	Percent %	0	100	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following:

1-The highest percentage in Epidural analgesia (No) have occurs hyperthermia (57.1%) in pregnancy use epidural analgesia.

2-The highest percentage in Normal delivery (Yes) have rise hyperthermia (100%)

a- Nausea occurs:

Table (11) Repetitive distribution and percentage of sample individuals for nausea occurs.

Nausea occurs		Epidural analgesia	Normal delivery	Total
No	Count	19	13	32
	Percent %	59.4	40.6	100
Yes	Count	1	7	8
	Percent %	12.5	87.5	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following.

1-The highest percentage in (Epidural analgesia) (No) was developed nausea (59.4%) after use epidural.

2-The highest percentage in Normal delivery (Yes) was not developed nausea (87.5%).

c- Drop in blood pressure (hypotension):

Table (12) Repetitive distribution and percentage of sample individuals for hypotension.

Drop in blood pressure (hypotension)		Epidural analgesia	Normal delivery	Total
No	Count	19	14	33
	Percent %	57.6	42.4	100
Yes	Count	1	6	7
	Percent %	14.3	85.7	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following.

1-The highest percentage in Epidural analgesia (No) was have hypotension (57.6%).

2- The highest percentage in Normal delivery (Yes) was have hypotension (85.7%)

d- Headache.

Table (13) Repetitive distribution and percentage of sample individuals for headache.

Headache		Epidural analgesia	Normal delivery	Total
No	Count	20	17	37
	Percent %	54.1	45.9	100
Yes	Count	0	3	3
	Percent %	0	100	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following.

1-The highest percentage in Epidural analgesia (No) was have headache after epidural analgesia (54.1%).

2-The highest percentage in Normal delivery (Yes) was have headache (100%)

1-Bleeding before or after delivery:

Table (14) Repetitive distribution and percentage of sample individuals for bleeding before or after delivery.

Did you have bleeding before or after delivery		Epidural analgesia	Normal delivery	Total
No	Count	20	14	34
	Percent %	58.8	41.2	100
Yes	Count	0	6	6
	Percent %	0	100	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following.

1-The highest percentage in Epidural analgesia No was have bleed (58.8%).

2-The highest percentage in Normal delivery Yes was have bleed (100%).

1-Did you move normally after delivery:

Table (15) Repetitive distribution and percentage of sample individuals for moves.

Did you move normally after delivery		Epidural analgesia	Normal delivery	Total
No	Count	4	4	8
	Percent %	50	50	100
Yes	Count	16	16	32
	Percent %	50	50	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following:

1-The highest percentage in Epidural analgesia - Normal delivery (No) was move normally after delivery (50%).

2-The highest percentage in Epidural analgesia - Normal delivery (Yes) was have difficult to moves (50%).

1-uses drug during delivery.

Table (16) Repetitive distribution and percentage of sample individuals for uses drug during delivery.

Use drug during delivery		Epidural analgesia	Normal delivery	Total
No	Count	0	13	13
	Percent %	0	100	100
Yes	Count	20	7	27
	Percent %	74.1	25.9	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following:

1. The highest percentage in Normal delivery (No) was use drug during delivery (100%).
2. The highest percentage in category (Yes) was (74.1%) in (Epidural analgesia).

1-Inflammation:

Table (17) Repetitive distribution and percentage of sample individuals for inflammation**.**

Inflammation		Epidural analgesia	Normal delivery	Total
No	Count	20	12	32
	Percent %	62.5	37.5	100
Yes	Count	0	8	8
	Percent %	0	100	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following:

1. The highest percentage in Epidural analgesia (No) was have inflammation (62.5%)
2. The highest percentage in Normal delivery (Yes) was have inflammation (100%)

6-Would you advise others to use it:

Table (18) Repetitive distribution and percentage of sample individuals for advise method delivery.

Would you advise others to use it		Epidural analgesia	Normal delivery	Total
No	Count	1	5	6
	Percent %	16.7	83.3	100
Yes	Count	19	15	34
	Percent %	55.9	44.1	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following:

1-The highest percentage in Normal delivery (No) was advice use normal delivery which high pain (83.3%)

2-The highest percentage in Epidural analgesia (Yes) was advice use epidural analgesia (55.9%).

1-Are you using this procedure in the next birth?

Table (19) Repetitive distribution and percentage of sample individuals for used procedure in next labor.

Are you using of normal labor in the next birth		Epidural analgesia	Normal delivery	Total
No	Count	0	6	6
	Percent %	0	100	100
Yes	Count	20	14	34
	Percent %	58.8	41.2	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following.

1-The highest percentage in Normal delivery (No) was high pain by normal delivery (100%).

2-The highest percentage in Epidural analgesia (Yes) was low incidence pain after delivery (58.8%)

1-Are you completely satisfied with this procedure:

Table (20) Repetitive distribution and percentage of sample individuals for satisfied with procedure.

Are you completely satisfied with this procedure		Epidural analgesia	Normal delivery	Total
No	Count	1	4	5
	Percent %	20	80	100
Yes	Count	19	16	35
	Percent %	54.3	45.7	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following:

1. The highest percentage in Normal delivery (No) was completely satisfied with this procedure (80%).
2. The highest percentage in Normal delivery (Yes) was completely satisfied with this procedure (54.3%).

9- What is the most effective way to control pain in delivery:

Table (21) Repetitive distribution and percentage of sample individuals for effective method.

What is the most effective way to control pain in delivery		Epidural analgesia	Normal delivery	Total
epidural analgesia	Count	20	0	20
	Percent %	100	0	100
the is no effective method	Count	0	20	20
	Percent %	0	100	100
Total	Count	20	20	40
	Percent %	50	50	100

The table above shows the following:

1. The highest percentage in epidural analgesia was effective method (100%) in (Epidural analgesia).
2. The highest percentage in category (the is no effective method) was (100%) in (Normal delivery) which high pain.

Discussion:

Epidural analgesia is an effective pharmacological technique used to manage labor pain. Although epidural analgesia may increase the risk of instrumental delivery, it is not associated with increasing risk of caesarean section, causing chronic back pain or affecting the neonate's Apgar score (Alakeely et al, 2018; Devroe et al., 2015).

Studies have shown that epidural anesthesia had decrease of the cardiovascular events

related to arrhythmia and the effect of significantly suppression raising the blood pressure during labor in pregnant women with cardiovascular disease. In pregnant women with the cardiovascular disease, epidural anesthesia during labor may be available (Tanaka et al, 2018; Iddrisu, M., & Khan, 2021).

Showed study in Finland showed that 66.55% of women with first vaginal delivery of singleton pregnancies had requested epidural analgesia for labor pain relief. In Brazil, women who requested epidural analgesia were satisfied with their experience and 97% of them would consider going through the same procedure at future deliveries.

The decision to use epidural analgesia during labor is affected by many factors such as the culture and background of the women, their knowledge, financial status, and educational level (Alakeely et al, 2018)

The current study was designed to compare the effect of epidural analgesia on prolong labor with normal vaginal delivery without intervention, to help in recommending the use of epidural technique in labor for safety and welfare of mother during delivery.

The women participated in the study, were divided into two groups, each of which included 20 women:

- Group (A): women who received a technique of epidural analgesia in labor.
- Group (B): women with normal vaginal delivery and who didn't receive a technique of epidural analgesia.

As regard to the results, we found that there was a very statistically significant difference between the two study groups regarding the percentage of hyperthermia was the highest in NO category for group A and was 57.1% vs the percentage of category YES which was the highest in group B and was 100%.

Also, that there was statistically significant difference between the two groups as regards the percentage of hypotension was the highest in NO category for group A and was 57.6% vs the percentage of category YES which was the highest in group B and was 85.7%.

Also, that there was statistically significant difference between the two groups as regards the percentage of headache was the highest in NO category for group A and was 54.1% vs the percentage of category YES which was the highest in group B and was 100%.

Conclusion:

That use of epidural anesthesia technique is effective and safe for relieving labor pain and delivery we noticed that women who used epidural anesthesia during labor and delivery are less likely to have complications than those who gave birth normally, and therefore we can say that epidural anesthesia is effective and safe during labor and will decrease risk of cesarean section.

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