fizjoterapia polska

POLISH JOURNAL OF PHYSIOTHERAPY

OFICJALNE PISMO POLSKIEGO TOWARZYSTWA FIZJOTERAPII

THE OFFICIAL JOURNAL OF THE POLISH SOCIETY OF PHYSIOTHERAPY

NR 3/2022 (22) DWUMIESIĘCZNIK ISSN 1642-

The use of deep friction massage techniques and Kinesiology Taping ® (KT) in patients with faulty body posture

Zastosowanie masażu głębokiego i technik Kinesiology Tapingu ® (KT) u pacjentów z wadliwą postawą ciała

Post-COVID-19 rehabilitation in the post-hospitalization period

Postępowanie rehabilitacyjne po przebytej chorobie COVID-19 w okresie poszpitalnym

mindray
healthcare within reach

ULTRASONOGRAFIA W FIZJOTERAPII

Autoryzowani dystrybutorzy

Mar-Med

+48 22 853 14 11

info@mar-med.pl

Ado-Med

+48 32 770 68 29

adomed@adomed.pl

MAR-MED
OD 1995 ROKU

ADO-MED®
APARATURA MEDYCZNA

Zawód Fizjoterapeuty dobrze chroniony

Poczuj się bezpiecznie

INTER Fizjoterapeuci
Dedykowany Pakiet Ubezpieczeń

Zaufaj rozwiązaniom sprawdzonym w branży medycznej.
Wykup dedykowany pakiet ubezpieczeń INTER Fizjoterapeuci, który zapewni Ci:

- ochronę finansową na wypadek roszczeń pacjentów – NOWE UBEZPIECZENIE OBOWIĄZKOWE OC
- ubezpieczenie wynajmowanego sprzętu fizjoterapeutycznego
- profesjonalną pomoc radców prawnych i zwrot kosztów obsługi prawnej
- odszkodowanie w przypadku fizycznej agresji pacjenta
- ochronę finansową związaną z naruszeniem praw pacjenta
- odszkodowanie w przypadku nieszczęśliwego wypadku

Nasza oferta była konsultowana ze stowarzyszeniami zrzeszającymi fizjoterapeutów tak, aby najskuteczniej chronić i wspierać Ciebie oraz Twoich pacjentów.

Skontaktuj się ze swoim agentem i skorzystaj z wyjątkowej oferty!

Towarzystwo Ubezpieczeń INTER Polska S.A.
Al. Jerozolimskie 142 B
02-305 Warszawa

www.interpolska.pl

inter UBEZPIECZENIA

PTF ubezpieczenia

zabezpiecz się przed potencjalnymi roszczeniami pacjentów

program ubezpieczeń dla fizjoterapeutów
pod patronatem PTF

dla kogo?

Zarówno dla fizjoterapeutów prowadzących własną działalność w formie praktyki zawodowej, podmiotu leczniczego jak również tych, którzy wykonują zawód wyłącznie na podstawie umowy o pracę lub umowy zlecenie.

co obejmuje program ubezpieczeń?

- igłoterapie
- zabiegi manualne (mobilizacje i manipulacje)
- leczenie osteopatyczne
- naruszenie praw pacjenta i szkody w mieniu pacjentów

oraz szereg innych rozszerzeń ukierunkowanych na zawód fizjoterapeuty

kontakt w sprawie ubezpieczeń:

Piotr Gnat
+48 663 480 698
piotr.gnat@mentor.pl
linkedin.com/in/piotrgnat

ubezpiecz się **on-line** na **PTFubezpieczenia.pl**

THUASNE

SpryStep®

Dynamiczne ortezy
stawu skokowego i stopy

UŁATWIA PORUSZANIE SIĘ Z KAŻDYM KROKIEM

SpryStep® flex i SpryStep® mają na celu zapewnienie wsparcia pacjentom cierpiącym z powodu opadającej stopy pochodzenia neurologicznego, pourazowego lub mięśniowego. SpryStep® plus i SpryStep® max mają na celu zapewnienie podpracia stopie oraz dolnej kończynie pacjenta z osłabieniem dolnych kończyn pochodzenia neurologicznego, urazowego lub mięśniowego. Produkty z grupy SpryStep® są wyrobami medycznymi, posiadającymi oznakowanie CE. Przed użyciem należy zapoznać się z instrukcją oraz zasięgnąć porady specjalisty. Sprystep®, Sprystep® flex, Sprystep® plus i Sprystep® max : Thuasne Deutschland GmbH, Germany

medkonsulting

PROFESJONALNE URZĄDZENIA DIAGNOSTYCZNE I TRENINGOWE DLA SZPITALI, GABINETÓW LEKARSKICH, OŚRODKÓW REHABILITACYJNYCH I SPORTOWYCH.

TANITA

Healthy Habits for Happiness

Analizatory Składu Ciała

Mierz, moniotoruj, motywuj.

Daj swoim pacjentom informacje, których potrzebują do osiągnięcia sukcesu!

Analiza składu ciała wykonywana jest w około 30 sekund, a wyniki przedstawiane są na przejrzystym raporcie.

Produkty profesjonalne TANITA wykorzystywane są przez szpitale, ośrodki badawcze, centra diagnostyczne, placówki rehabilitacyjne, kluby sportowe, osoby pracujące ze sportowcami różnych dyscyplin na całym świecie.

Więcej na **tanitapolska.pl**

MICROGATE

OPTOGAIT

INNOWACYJNA DIAGNOSTYKA ZDOLNOŚCI MOTORYCZNYCH I ANALIZA CHODU

Systemy MICROGATE wspierają diagnozę, ocenę postępów oraz proces rehabilitacji.

Modelowanie programów rehabilitacyjnych i kontrola procesu rehabilitacji są ułatwione dzięki obiektywnej ocenie sposobu ruchu, wykrywaniu problematycznych obszarów, ocenie biomechanicznych braków oraz ocenie asymetrii.

Możliwe parametry pomiarowe:

- fazy chodu lub biegu
- długość kroku
- prędkość i przyspieszenie
- równowaga i symetria ruchu
- wideo Full HD

.... i wiele innych, w zależności od przeprowadzonych testów.

W połączeniu z GYKO, możliwa jest ocena stabilności dynamicznej tułowia podczas chodu/biegu, analiza skoku, analiza stabilności posturalnej, analiza zakresu ruchomości stawów (ROM), ocena siły mięśniowej.

Więcej na **microgatepolska.pl**

EXXENTRIC

FLYWHEEL TRAINING

Trening siłowy i rehabilitacja z użyciem zmiennej bezwładności kół zamachowych.

Exxentric wykorzystuje moment bezwładność koła zamachowego zamiast zwykłej grawitacji. To daje możliwość wykonywania ćwiczeń standardowych oraz zaawansowanych metod treningu ekscentrycznego, koncentrycznego i izometrycznego.

Jako skuteczna metoda poprawy siły i stabilności, trening ekscentryczny ułatwi pacjentom osiągnięcie zamierzonych efektów – poprawy ogólnego stanu zdrowia, wyników sportowych, rehabilitacji, czy zapobieganiu urazom.

Szeroki wybór akcesoriów i dodatków do treningu z kołem zamachowym pomoże w stworzeniu idealnego rozwiązania dla Ciebie.

Więcej na **treningekscentryczny.pl**

MEDKONSULTING Tanita Polska - Wyłączny dystrybutor urządzeń Tanita w Polsce
T: +48 517 435 227 | +48 61 868 58 42 **E:** kontakt@medkonsulting.pl **A:** ul. Jana Ludygi-Laskowskiego 21, 61-407 Poznań

POWRÓT DO SPRAWNOŚCI PO AMPUTACJI

Czym jest program po amputacji?

Po Amputacji to unikalne w skali kraju rozwiązanie dla osób, u których konieczna była operacja odjęcia kończyn. Celem programu jest kompleksowe wsparcie w procesie odzyskania sprawności po amputacji, niezależnie od jej przyczyny. Pomagamy pokonywać granice, osiągać kolejne cele, kreować bardziej przyjazną rzeczywistość.

W ramach programu oferujemy:

- Opieka Menadżera Rehabilitacji
- Dofinansowanie do zakupu protez
- Wsparcie psychologiczne
- Bezpłatne konsultacje protetyczne
- Rehabilitacja w ośrodkach na terenie kraju
- Pomoc Asystentów Wsparcia

Skontaktuj się z nami i zapytaj o bezpłatne egzemplarze Poradnika dla osób po amputacji do Twojej placówki.

Masz pytanie odnośnie programu. Napisz do nas lub skontaktuj się z nami telefonicznie:

+48 793 003 695

biuro@poamputacji.pl www.poamputacji.pl

POAMPUTACJI
Razem możemy więcej

KALMED
Iwona Renz, Poznań

ARTROMOT®
WYŁĄCZNY PRZEDSTAWICIEL
WWW.KALMED.COM.PL

DJO GLOBAL

SPRZEDAŻ I WYPOŻYCZALNIA ZMOTORYZOWANYCH SZYN CPM ARTROMOT®

Nowoczesna rehabilitacja CPM stawu kolanowego, biodrowego, łokciowego, barkowego, skokowego, nadgarstka oraz stawów palców dłoni i kciuka.

ARTROMOT-K1

ARTROMOT-SP3

ARTROMOT-S3

ARTROMOT-E2

ARTROMOT-H

ARTROMOT-F

Najnowsze konstrukcje ARTROMOT zapewniają ruch bierny stawów w zgodzie z koncepcją PNF (Proprioceptive Neuromuscular Facilitation).

ARTROSTIM FOCUS PLUS

KALMED Iwona Renz
ul. Wilczak 3
61-623 Poznań
www.kalmed.com.pl

tel. 61 828 06 86
faks 61 828 06 87
kom. 601 64 02 23, 601 647 877
kalmed@kalmed.com.pl

Serwis i całodobowa pomoc techniczna:
tel. 501 483 637
service@kalmed.com.pl

mindray
healthcare within reach

ULTRASONOGRAFIA

W FIZJOTERAPII

Autoryzowani dystrybutorzy

Mar-Med

+48 22 853 14 11

info@mar-med.pl

Ado-Med

+48 32 770 68 29

adomed@adomed.pl

MAR-MED
OD 1995 ROKU

ADO-MED®
APARATURA MEDYCZNA

Dr. Comfort®

Nowy wymiar wygody.

Obuwie profilaktyczno-zdrowotne o atrakcyjnym wzornictwie

NAGRODA POLSKIEGO TOWARZYSTWA REHABILITACJI

ACCEPTED
AMERICAN PODIATRIC MEDICAL ASSOCIATION

APROBATA AMERYKAŃSKIEGO MEDYCZNEGO STOWARZYSZENIA PODIATRYCZNEGO

CE WYRÓB MEDYCZNY

Miękki, wyściełany kołnierz cholewki
Minimalizuje podrażnienia

Stabilny, wzmocniony i wyściełany zapiętek
Zapewnia silniejsze wsparcie łuku podłużnego stopy

Wyściełany język
Zmniejsza tarcie i ulepsza dopasowanie

Lekka konstrukcja
Zmniejsza codzienne zmęczenie

Antypoślizgowa, wytrzymała podeszwa o lekkiej konstrukcji
Zwiększa przyczepność, amortyzuje i odciąża stopy

Zwiększona szerokość i głębokość w obrębie palców i przodostopia
Minimalizuje ucisk i zapobiega urazom

Wysoka jakkość materiałów - oddychające siatki i naturalne skóry
Dostosowują się do stopy, utrzymują je w suchości i zapobiegają przegrzewaniu

Ochronna przestrzeń na palce - brak szwów w rejonie przodostopia
Minimalizuje możliwość zranień

Trzy rozmiary szerokości

Podwyższona tęgość

Zwiększona przestrzeń na palce

WSKAZANIA

• haluksy • wkładki specjalistyczne • palce młotkowate, szponiaste • cukrzyca (stopa cukrzycowa) • reumatoidalne zapalenie stawów • bóle pięty i podeszwy stopy (zapalenie rozcięgna podeszwowego - ostroga piętowa) • płaskostopie (stopa poprzecznie płaska) • bóle pleców • wysokie podbicie • praca stojąca • nerwiak Mortona • obrzęk limfatyczny • opatrunki • ortezy i bandaże • obrzęki • modzele • protezy • odciski • urazy wpływające na ścięgna, mięśnie i kości (np. ścięgno Achillesa) • wrastające paznokcie

KALMED
Iwona Renz, Poznań

ul. Wilczak 3
61-623 Poznań
tel. 61 828 06 86
fax. 61 828 06 87
kom. 601 640 223, 601 647 877
e-mail: kalmed@kalmed.com.pl
www.kalmed.com.pl

www.butydlazdrowia.pl **www.dr-comfort.pl**

PolisaMed

program
ubezpieczeń
dla studentów
kierunków medycznych

Drodzy Studenci

szukający artykułów do pracy naukowej.

Przypominamy o dobrowolnym ubezpieczeniu OC studentów kierunków medycznych!

dlaczego warto je mieć?

- ponieważ bywa wymagane w trakcie praktyk, staży czy wolontariatu
- niektóre Uczelnie wymagają je do udziału w zajęciach praktycznych
- działa na całym świecie, a dodatkowo otrzymasz certyfikat w języku angielskim w razie wyjazdu na ERASMUS-a
- wywołuje uśmiech na twarzy Pań z dziekanatów – sami sprawdziliśmy!

posiadamy również w ofercie ubezpieczenia dla masażystów i techników masażystów.

PolisaMed

kontakt w sprawie ubezpieczeń:

+48 56 642 41 82
kontakt@polisa.med.pl

Ubezpiecz się **on-line** na **polisa.med.pl**

NOWOŚCI

FUNKCYJNA **BIELIZNA LECZNICZA**

PRZECIWŻYLAKOWA

Przeciwżylakowe wyroby pończosznicze włoskich producentów, bardzo skuteczne i niezwykle eleganckie. Dostępne **w I, II oraz III klasie kompresji** w wielu modelach, w różnym stopniu przezroczystości (m. in. wyjątkowo przezroczyste w II kl. ucisku), w szerokiej gamie kolorystycznej, w różnych wersjach długości, z palcami zamkniętymi lub otwartymi

- podkolanówki
- pończochy
- legginsy
- rajstopy
- rękawy kompresyjne

ANTYCELLULITOWA, NA LIMFODEMIĘ I LIPODEMIĘ

Bielizna i odzież wykonana jest z mikrofibry. Unikalny splot nawet przy najmniejszym ruchu wywołuje **efekt masażu**. Dzianina stymuluje cyrkulację podskórną i drenaż limfatyczny. Prowadzi to do poprawy jakości skóry

- z włókna emana®
- z kofeiną i wit. E
- z nanosrebrem

NA NIETRZYMANIE MOCZU

Wyroby medyczne **wielokrotnego użytku** z dyskretną stałą wszywką o właściwościach chłonnych. Polecane jako codzienna bielizna gwarantująca ochronę przed przemakaniem - 100% absorpcji cieczy, zapewniająca całkowitą suchość warstw: zewnętrznej i wewnętrznej

- do wielokrotnego prania (min. 100 prań)

ARTCOLL MEDICALE

artcoll.pl
e-sklep@artcoll.pl
tel. 22 720 35 96
+48 510 160 100

fizjoterapia polska
nr 3/2022 (22)

Impact of different types of anaesthesia for cesarean delivery on subacute low back pain intensity and disability: A retrospective cohort study

Wpływ różnych rodzajów znieczulenia stosowanych przy cesarskim cięciu na nasilenie podostrego bólu krzyża i niepełnosprawność: retrospektywne badanie kohortowe

Mohamed G. Ali[1,2(A,B,C,D,E,F,G)], Mohammed A. Soliman[3(B,E)], Amel M. Yousef[1(A,C,D,E,F)], Fahima M. Okeel[1(A,C,D,E,F)], Mohammed A.M. Sarhan[2(A,B,C,E)]

[1]Faculty for Physical Therapy, Cairo University, Giza, Egypt
[2]Faculty for Physical Therapy, South Valley University, Qena, Egypt
[3]Faculty of Medicine, South Valley University, Qena, Egypt

Abstract

Background. Low back pain (LBP) is common after cesarean delivery. So, this study was conducted to assess and compare the intensity of subacute LBP and disability among women who underwent cesarean delivery with different anaesthetic types.
Methodology. This retrospective cohort study was conducted to 38 women "26 of them underwent cesarean delivery, assessed after 6 to 12 weeks from delivery, they were classified into: [epidural anaesthetic group (Group A) n = 6, spinal anaesthetic group (Group B) n = 13, general anaesthetic group (Group C) n = 7], they were either primiparous or multiparous who did not receive anaesthesia for at least one year prior to the last delivery, the other 12 women were the control group (Group D) who didn't experience pregnancy or anaesthesia".
Results. The mean values of visual analogue scale (VAS) in Group A, Group B, Group C, and Group D were 5.00 ± 1.67, 4.62 ± 1.12, 5.14 ± 1.21, and 2.17 ± 0.71, respectively. The ANOVA test revealed a significant difference in VAS (P = 0.0001; P < 0.05) among the four groups. while the post-hoc test revealed non-significant differences (P = 1.000; P > 0.05) between the three anaesthetic groups. Also, the mean values of Oswestry Disability Index (ODI) in the same four groups were 26.00 ± 16.68, 27.00 ± 11.72, 30.00 ± 6.87, and 25.00 ± 9.33, respectively. The ANOVA test revealed non-significant difference in ODI (P = 0.838; P < 0.05) among the four groups.
Conclusion. Epidural, spinal and general anaesthesia for cesarean delivery are associated with increased intensity of subacute LBP, but without significant differences between these anaesthetic types. However, they do not increase the disability.

Key words:

neuraxial anaesthesia, general anaesthesia, cesarean delivery, subacute period, low back pain

Streszczenie

Informacje wprowadzające. Ból krzyża (LBP) jest dolegliwością powszechnie występującą u kobiet po cesarskim cięciu. W związku z tym niniejsze badanie przeprowadzono w celu oceny i porównania nasilenia podostrego bólu krzyża i niepełnosprawności wśród kobiet po cesarskim cięciu, u których zastosowano różne typy znieczulenia.
Metodologia. Niniejsze retrospektywne badanie kohortowe zostało przeprowadzone na 38 kobietach. „26 z nich miało cięcie cesarskie, którego stan oceniono po 6 do 12 tygodniach od porodu. Kobiety zostały zaklasyfikowane do: grupy znieczulenia zewnątrzoponowego (Grupa A) n = 6, grupy znieczulenia podpajęczynówkowego (Grupa B) n = 13, grupy znieczulenia ogólnego (Grupa C) n = 7. Wśród pacjentek były pierworódki lub wieloródki, które nie otrzymywały znieczulenia przez co najmniej rok przed ostatnim porodem; pozostałe 12 kobiet stanowiło grupę kontrolną (Grupa D), która nigdy nie była w ciąży ani nie była poddana znieczuleniu".
Wyniki. Średnie wartości wizualnej skali analogowej (VAS) w grupie A, grupie B, grupie C i grupie D wynosiły odpowiednio 5,00 ± 1,67, 4,62 ± 1,12, 5,14 ± 1,21 i 2,17 ± 0,71. Test ANOVA wykazał istotną różnicę w VAS (p = 0,0001; p < 0,05) pomiędzy czterema grupami, natomiast test post-hoc wykazał nieistotne różnice (p = 1000; p > 0,05) pomiędzy trzema grupami poddawanymi znieczuleniu. Również średnie wartości wskaźnika niepełnosprawności Oswestry (ODI) w tych samych czterech grupach wynosiły odpowiednio 26,00 ± 16,68, 27,00 ± 11,72, 30,00 ± 6,87 i 25,00 ± 9,33. Test ANOVA wykazał nieistotną różnicę w ODI (p = 0,838; p < 0,05) pomiędzy czterema grupami.
Wniosek. Znieczulenie zewnątrzoponowe, podpajęczynówkowe i ogólne do cięcia cesarskiego wiąże się ze zwiększoną intensywnością podostrego bólu krzyża, jednak bez istotnych różnic między tymi rodzajami znieczuleń. Znieczulenia nie powodują zintensyfikowania niepełnosprawności.

Słowa kluczowe

Znieczulenie nerwu osiowego, znieczulenie ogólne, poród cesarski, podostry ból krzyża

Introduction

Cesarean section is one of the most common surgical procedures in obstetrics, and it is also one of the oldest medical procedures [1]. Despite the international approaches to decrease the rate of cesarean delivery universally [2], In Egypt, the prevalence of CS has risen dramatically over the last decade, with the most recent Egypt Demographic and Health Survey (EDHS) reporting a rate of 52 percent [3].

The anaesthetic strategy used for caesarean section is determined by several criteria, including the patient's physiological condition, the practitioner's level of experience, drug availability, and equipment, among others [4]. The gold standard anaesthesia for caesarean delivery has been and continues to be neuraxial anaesthesia [5]. The most frequent central neuraxial anaesthesia techniques used as the surgical procedure and for labor and delivery are spinal and epidural anaesthesia [6]. For neuraxial anaesthesia, two popular approaches are median and paramedian. The median technique is the most usual, and it entails passing the needle through the supraspinous, interspinous, and ligamentum flavum ligaments [7]. The needle is typically inserted in the L3/4 or L4/5 interspace for neuraxial anaesthesia [8].

Low back pain (LBP) is a typical mild but unpleasant consequence of epidural anaesthesia. It is thought to be caused by needle trauma and local anaesthetic myotoxicity [9], postdural puncture backache (PDPB), which is defined as a persistent pain around the puncture site without radicular pain, is a common consequence following spinal anaesthesia and some studies reported that in the adult population, the incidence of low back pain after spinal anaesthesia is similar to that after general anaesthesia. [10].

Low back pain can be described by duration such as acute low back pain (when pain lasting for a maximum of 6 weeks), subacute low back pain (when pain lasting from the 6th to the 12th weeks) and chronic low back pain (when pain lasting over the 12th weeks) [11]. Back pain following anaesthesia may be attributed to ligament, fascia, or bone injuries with localized bleeding; rigidity of the spine; anaesthesia-induced relaxation of the paraspinal muscles; flattening of the typical lumbar convexity; and stretching and straining of the lumbosacral ligaments and joint capsules [10].

This study investigated if the epidural, spinal anaesthesia or general anaesthesia were a relative risk for subacute low back pain and disability after cesarean delivery and if there were differences between the subacute low back pain intensity between the three anaesthetic groups. To fill the gap in this point as there was a controversy regarding the effect of different anaesthetic types for cesarean delivery on subacute low back pain and disability. Based on the hypothesis that all of the studied obstetric anaesthetic types have neither a relative risk for subacute low back pain nor disability after cesarean section, we outlined this study to investigate the link between the studied anaesthetic types for cesarean section and the subacute low back pain as well as the disability.

Methodology

Study design

Retrospective cohort study.

Settings

This study was conducted in South Valley University Teaching Hospitals between 1-5-2021 and 8-9-2021, Data were deidentified through hiding the identification codes of participants. The information regarding patient registry as phone number, date of delivery, type of delivery and anaesthesia were collected from the database of South Valley University Teaching Hospitals. However, the personal data as: the body weight, the height, BMI, waist to hip ratio, the previous history of non-myofascial low back pain and parity (the number of times a woman had delivered a fetus with a 24 weeks gestational age or more, whatever the born child was alive or stillborn [12]) were taken before assessment of the participants as these data were not available from the university database.

we contacted the participant by the mobile phone through their obtained numbers for assessment of the intensity of subacute low back pain and the disability.

Ethics Statement

The procedures confirmed by the International Ethical Committee Clearance of the Faculty of Physical Therapy at Cairo University (No: 012\001954) and were registered on ClinicalTrials gov.

Participants

Thirty-eight women participated in this study; Their ages were from 18 to 35-year-old to control age as age more than 35 is an effect modifier to low back pain [13], body mass index (BMI) were less than 30 and waist: hip ratio was less than 1 to adjust confounders as obesity and truncal obesity [14].

Except 12 of them who were the control group (no previous pregnancy or anaesthesia), All the other 26 women gave birth through a cesarean delivery to adjust confounding effect of cesarean delivery on low back pain [15]. who exposed to different anaesthetic techniques (epidural, spinal or general), they were either primiparous or multiparous who did not experience any type of anaesthesia for at least one year prior to the last delivery, assessment of subacute low back pain intensity (the primary outcome) using the VAS and low back pain related functional disability (secondary outcome) using the ODI was between the 6th week to the 12th week postnatal (Figure 1). We excluded women who delivered through vaginal delivery and any woman complained of previous non-myofascial low back dysfunctions as women who were diagnosed with lumbar disc prolapse or spondylolisthesis.

Variables of Interest

In this study, the independent variables of interest were cesarean delivery with the epidural anaesthesia, the spinal anaesthesia and the general anaesthesia. While the dependent variables were the intensity of subacute low back pain and disability after cesarean delivery measured with the VAS and ODI, respectively. The index date was defined as 6 weeks to 12 weeks after cesarean delivery of the participants enrolled in this study except the participants of the control group.

To assess the independent impacts of the anaesthetic groups on subacute low back pain intensity and disability, we adjusted for the possible confounding variables, such as the patient's BMI, waist to hip ratio and age in years as an effect modifier.

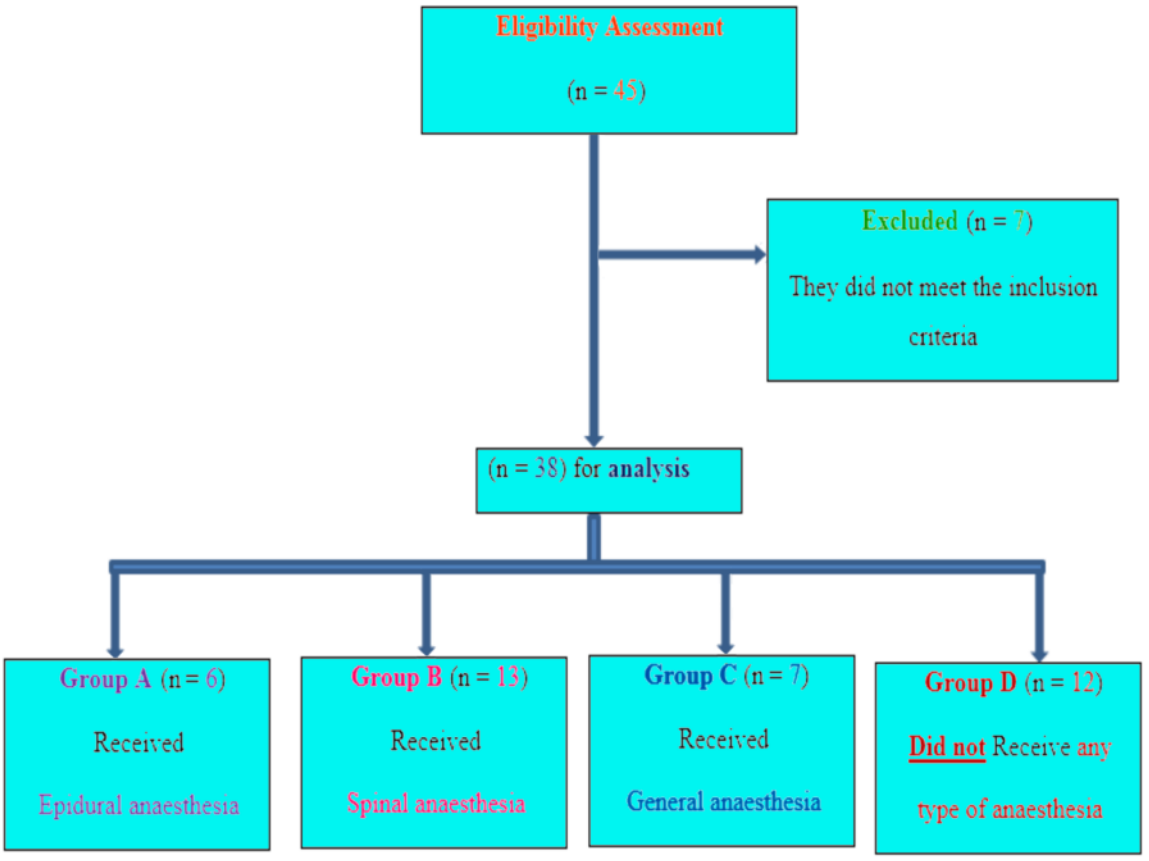

Figure 1. Flow chart of the study

Materials for evaluation

Visual analogue scale (VAS)

It was used to measure low back pain intensity in women in all groups.

As its reliability for disability when examined was moderate to good [16]. and It is an interval scale investigated by many studies in which most of their findings showed that it is a valid and reliable scale [17]. Scores are recorded by doing a handwritten mark on the 10-cm line which represents a continuum between "no pain" and "worst pain." [18].

Oswestry Disability Index (ODI) Version 2.1a

It was used to measure disability in different activities of daily livings in women in all groups.

The ODI was not only a reliable but also a valid suitable scale for assessment of

disability among LBP patients [19]. The Oswestry Low Back Pain Disability Index is a ten-item self-assessment questionnaire with six levels of replies ranging from 0 to 5. Pain, personal care, lifting and moving objects, walking, sitting, standing, difficulties during sleep induced by low back pain, sex life, social life, and traveling are examples of these items. The proportion of disability (the score obtained divided by 50 and multiplied by 100) varies from 0% (no disability) to 100% (disability) (complete disability). The following scores are used to interpret the scale: 0 to 20%: minor impairment; 20 to 40%: moderate disability; 40 to 60%: severe disability; 60 to 80%: debilitating low back [20].

Statistical analysis

The statistical analysis was conducted by using statistical SPSS Package program version 25 for Windows (SPSS, Inc., Chicago, IL). Data are expressed as mean and standard deviation for age, BMI, PPD/week, parity/child, VAS, and ODI variables. One way analysis of variance (ANOVA-test) to compare among the 4 groups; epidural anathesia group (Group A), spinal anathesia group (Group B), general anathesia group (Group C), and control group (Group D) for age, BMI, PPD/week, parity/child, VAS, and ODI variables. Bonferroni correction test was used to compare between pairwise between groups for VAS variable which P-value was significant from ANOVA-test. All statistical analyses were significant at probability ($P \leq 0.05$).

Results

Data collection

Data were screened, for normality assumption test and homogeneity of variance. Normality test of data using Shapiro-Wilk test was used, that reflect the data was normally distributed ($P > 0.05$) after removal outliers that detected by box and whiskers plots. Additionally, Levene's test for testing the homogeneity of variance revealed that there was no significant difference ($P > 0.05$). So, the data are normally distributed and parametric analysis is done.

In the current study, a total of 38 patients participated and they were classified into three groups according to the type of anaesthesia and the fourth group was the control group who did

not have previous pregnancy or receive any type of anaesthesia. No significant differences in age (P = 0.925; P > 0.05) and BMI (P = 0.059; P > 0.05), but there were significant differences in both Postpartum duration (PPD)/week, (P = 0.0001; P < 0.05) and parity/child (P = 0.0001; P < 0.05) among the four groups and these significant differences were because of the presence of the control group who did not have any previous pregnancy or postpartum duration (Table 1).

Table 1. Comparison of general characteristics among the 4 groups

Items	Group A (n = 6)	Group B (n = 13)	Group C (n = 7)	Group D (n = 12)	P-value
Age [year]	23.50 ± 3.72	23.62 ± 4.07	24.86 ± 7.17	23.92 ± 1.78	0.925
BMI [kg/cm^2]	26.60 ± 1.98	24.63 ± 3.26	27.37 ± 2.18	23.52 ± 3.89	0.059
PPD/week	7.33 ± 0.51	8.08 ± 2.21	8.43 ± 1.81	0.00 ± 0.00	0.0001*
Parity/child	1.33 ± 0.51	2.15 ± 1.06	2.57 ± 1.71	0.00 ± 0.00	0.0001*

Group A: Epidural anaesthesia group; Group B: Spinal anaesthesia group; Group C: General anaesthesia group; Group D: Control group,
Data are expressed as mean ± standard deviation (SD)
*P-value: probability value; P-value > 0.05: non-significant; *Significant (P < 0.05)*

When the three anaesthetic groups (Epidural, Spinal and General) were compared without the control group, there were no significant differences in means of both postpartum duration PPD/week ((P = 0.568; P > 0.05) and parity (P = 0.189; P > 0.05) (Table 2).

Table 2. Comparison of general characteristics among the 3 anaesthetic groups

Items	Group A (n = 6)	Group B (n = 13)	Group C (n = 7)	P-value
PPD/week	7.33 ± 0.51	8.08 ± 2.21	8.43 ± 1.81	0.568
Parity/child	1.33 ± 0.51	2.15 ± 1.06	2.57 ± 1.71	0.189

Group A: Epidural anaesthesia group; Group B: Spinal anaesthesia group; Group C: General anaesthesia group
Data are expressed as mean ± standard deviation (SD) P-value: probability value; P-value > 0.05: non-significant

The mean values of VAS in epidural anaesthesia group (Group A), spinal anaesthesia group (Group B), general anaesthesia group (Group C), and control group (Group D) were 5.00 ± 1.67, 4.62 ± 1.12, 5.14 ± 1.21, and 2.17 ± 0.71, respectively (Table 3). The statistical analysis by ANOVA test revealed that there was significant difference in VAS (P = 0.0001; P < 0.05) among groups A, B, C, and D.

While the mean values of ODI in epidural anaesthesia group (Group A), spinal anaesthesia group (Group B), general anaesthesia group (Group C), and control group (Group D) were 26.00 ± 16.68, 27.00 ± 11.72, 30.00 ± 6.87, and 25.00 ± 9.33, respectively (Table 3). The statistical analysis by ANOVA test revealed that there was no significant difference in ODI (P = 0.838; P < 0.05) among groups A, B, C, and D.

Table 3. Comparison of VAS and ODI among the 4 groups

Items	Group A (n = 6)	Group B (n = 13)	Group C (n = 7)	Group D (n = 12)	P-value
VAS	5.00 ± 1.67	4.62 ± 1.12	5.14 ± 1.21	2.17 ± 0.71	0.0001*
ODI	26.00 ± 16.68	27.00 ± 11.72	30.00 ± 6.87	25.00 ± 9.33	0.838

Epidural anaesthesia group; Group B: Spinal anaesthesia group; Group C: General anaesthesia group; Group D: Control group
Data are expressed as mean ± standard deviation (SD)
*P-value: probability value; P-value > 0.05: non-significant; * Significant (P < 0.05)*

Post-hoc test (Bonferroni test) and mean difference for VAS between pairwise of the groups (Table 4). There were significant differences (P = 0.0001; P < 0.05) in VAS between group A versus group D, group B versus group D, and group C versus group D, but no significant differences (P = 1.000; P > 0.05) between group A versus group B, group A versus group C, and group B versus group C. Bonferroni test and mean differences between groups showed that the spinal anaesthesia group (Group B)

gave the lowest mean differences response of VAS (MD = 2.44), followed by epidural anaesthesia group (Group A; MD = 2.83), and then general anaesthesia group (Group C; MD = 2.97) compared to the control group (Group D).

Table 4. Post-hoc test (Bonferroni test) of VAS between pairwise of groups

Variable	Items	Post-hoc (Bonferroni test)		
		Mean difference (MD)	95% CI	P-value
VAS	Group A vs. Group B	0.38	−1.18 – 1.95	1.000
	Group A vs. Group C	0.14	−1.91 – 1.62	1.000
	Group A vs. Group D	2.83	1.25 – 4.42	0.0001*
	Group B vs. Group C	0.52	−2.01 – 0.96	1.000
	Group B vs. Group D	2.44	1.18 – 3.72	0.0001*
	Group C vs. Group D	2.97	1.47 – 4.49	0.0001*

Group A: Epidural anaesthesia group; Group B: Spinal anaesthesia group; Group C: General anaesthesia group; Group D: Control group
CI: confidence interval; P-value: probability value; P-value > 0.05: non-significant.
** Significant (P < 0.05)*

Discussion

When comparing post-partum women who had a caesarean section to those who had a normal vaginal delivery, the prevalence of lower backache is higher [15]. This study is the first study that assess and compare the intensity of subacute low back pain and disability in women who underwent cesarean delivery after the 6th week to the 12th week postnatal with different anaesthetic types and compare it to the control group who did not have any previous pregnancy or any type of anaesthesia to investigate the difference in subacute low back pain intensity among different anaesthetic types.

Limitations of this study were lack of cooperation from some women in some groups as in the epidural and general anaesthetic groups. Also, the decreased rate of using epidural and general anaesthetic types for cesarean delivery nowadays influenced on the number of participants in these two groups relatively with group of spinal anaesthesia or the control group as neuraxial anesthesia specially spinal anesthesia has been advocated as the excellent choice for uncomplicated elective cesarean section because the neuraxial anaesthesia avoids the respiratory implication, has less risk of gastric content aspiration, and it can be easily performed [21].

Our findings showed significant differences between the mean values of VAS that reflect the intensity of subacute low back pain in all women underwent cesarean delivery whatever the type of anaesthesia (Epidural, Spinal and General) compared to the control group who did not have any previous pregnancy or any type of anaesthesia and these findings that revealed that there was a significance in the mean difference of VAS between the group of cesarean delivery with epidural anaesthesia and the control group comes in agreement with Chia et al., [22] who concluded that cesarean section with epidural anaesthesia might raise the risk of subsequent low backache compared to normal labor. Also, another study by Macarthur and colleagues., [23] concluded that the relation between back pain and epidural anaesthesia is most likely causal. It appears to result from a combination of impact of analgesia and stressful labor posture.

We found that there was a significance in the mean difference of VAS between the group of cesarean delivery with spinal anaesthesia and the control group with the VAS score of spinal anaesthetic group was 4.62 (moderate pain intensity) comes in agreement with the study of Tariq et al., [24] who revealed that 78% of housewives complained of low backache after cesarean delivery under spinal anesthesia with 44.9% of them had moderate intensity pain.

Also, we found that there was no significance in the mean of VAS scores between the group of cesarean delivery with spinal anaesthesia and the general anaesthesia group and this was supported by the study of Standl et al., [25] who concluded that the incidence of low back pain after spinal anaesthesia and general anaesthesia has been observed to be similar.

Our results also showed that there were no significant differences in the mean of VAS between the anaesthetic groups (epidural, spinal and general) and these findings were run in the line with the findings of Benzon et al., [11] who concluded in their review that the use of neuraxial anaesthesia (spinal or epidural anaesthesia) in the adult, non-obstetric, and obstetric populations should be based on the benefits of the technique rather than the occurrence of back pain following the procedure, as back pain following neuraxial anaesthesia in the adult population is similar to that following general anaesthesia.

We found that disability ODI percent did not reflect the intensity of pain VAS score in the control group and this comes in agreement with the findings of Solomon & Roopchand-Martin [26] who concluded that the low to moderate correlation between pain VAS and disability ODI speaks to the seriousness of assessing both the intensity of LBP and disability in LBP population and not obtaining information from one scale to make assumptions about the other.

On the other hand, we found there was subacute low back pain that lasted 6-12 weeks after cesarean delivery in the neuraxial groups which is contradicted to the findings of Chan., [27] who found that pain was limited to the injection site, mild to moderate in intensity, and only lasted up to four days. Another contradicted study to our findings was done by Malevic et al.,

[28] who concluded that the labor pain anaesthetic techniques (epidural and general anaesthesia) did not cause the increased risk of low back pain in the early postnatal period and after six months of delivery.

Our study found that the scores of pain VAS were not matched with the percent of disability ODI specially in the control group and this is confuted with the findings of Alagami et al., [29] who examined the ODI Arabic version validity and found that the correlations of the Oswestry Disability Index (ODI) with the pain VAS was significant ($r = 0.708$, $P < 0.01$). Also, another study conducted by McGorry & Webster [30] concluded that a significant effect of pain intensity on disability was found and Pain intensity can affect disability and this is contradicted with our results which proved that the pain VAS score did not affect the ODI disability as in the control group.

Further studies with larger sample size and objective methods to assess pain and biomechanical function of the low back are needed to ensure our statistical findings.

Conclusion

It can be concluded that different anaesthetic types such as epidural, spinal, and general anaesthesia for cesarean delivery were associated with increased intensity of subacute low back pain, but there were no significant differences in pain intensity between these different types of anaesthesia. However, the subacute low back pain intensity of the spinal anaesthetic group was the lowest followed by epidural anaesthetic group and then general anaesthetic group. Also, these different anaesthetic types did not increase the functional disability that related to low back pain.

Adres do korespondencji / Corresponding author

Mohamed Gamal Ali

E-mail: dr_m.gamal1987@svu.edu.eg

Acknowledgment

The authors thank Dr. Abeer A. Mohammed (Lecturer of Physical Therapy for Neuromuscular Disorders, Cairo University), El Zahraa Kamal and Somaya Saber (Internship students of Physical Therapy) for their assistance in the practical part of the study and all regards to women who kindly participated in this study. We are so grateful to South Valley University for facilities and to the staff members of the teaching hospitals.

Piśmiennictwo/ References

1. Barber EL, Lundsberg LS, Belanger K, Pettker CM, Funai EF, Illuzzi JL. Indications contributing to the increasing cesarean delivery rate. Obstetrics & Gynecology. 2011 Jul 1;118(1):29-38.
2. Robson MS. Use of indications to identify appropriate caesarean section rates. The Lancet Global Health. 2018 Aug 1;6(8): e820-1.
3. Abdel-Tawab NG, Oraby D, Hassanein N, El-Nakib S. Cesarean section deliveries in Egypt: Trends, practices, perceptions, and cost. 2018.
4. Iddrisu M, Khan ZH. Anesthesia for cesarean delivery: general or regional anesthesia—a systematic review. Ain-Shams Journal of Anesthesiology. 2021 Dec;13(1):1-7.
5. Mhyre JM, Sultan P. General anesthesia for cesarean delivery: occasionally essential but best avoided. Anesthesiology. 2019 Jun;130(6):864-6.
6. Turnbull JH, Aleshi P. Spinal, and epidural anesthesia. InBasic clinical anesthesia 2015 (pp. 211-231). Springer, New York, NY.
7. Haider S, Butt KJ, Aziz M, Qasim M. Post dural puncture headache-a comparison of midline and paramedian approaches. Biomedica. 2005 Jul; 21:90-2.
8. Broadbent CR, Maxwell WB, Ferrie R, Wilson DJ, Gawne Cain M, Russell R. Ability of anaesthetists to identify a marked lumbar interspace. Anaesthesia. 2000 Nov;55(11):1122-6.
9. Louizos A, Hadzilia S, Samanta E, Papavasilopoulou T, Koraka C, Georgiou L. Low back pain after epidural anaesthesia: two different approaches: A-403. European Journal of Anaesthesiology (EJA). 2005 May 1; 22:106.
10. Benzon HT, Asher YG, Hartrick CT. Back pain and neuraxial anesthesia. Anesthesia & Analgesia. 2016 Jun 1;122(6):2047-58.
11. Koes BW, Van Tulder M, Lin CW, Macedo LG, McAuley J, Maher C. An updated overview of clinical guidelines for the management of non-specific low back pain in primary care. European Spine Journal. 2010 Dec;19(12):2075-94.
12. Gaillard R, Rurangirwa AA, Williams MA, Hofman A, Mackenbach JP, Franco OH, Jaddoe VW. Maternal parity, fetal and childhood growth, and cardiometabolic risk factors. Hypertension Journal, 2014 May1;64(2), 266-274.
13. Levangie PK. Association of low back pain with self-reported risk factors among patients seeking physical therapy services. Physical therapy. 1999 Aug 1; 79(8), 757-766.
14. Rahman S, Jaro K, Päivi LA, Svetlana S, Eira VJ. The Association Between Obesity and Low Back Pain: A Meta-Analysis, American Journal of Epidemiology. 2010 January 15;171(2)135–154.
15. Boonstra AM, Preuper HR, Reneman MF, Posthumus JB, Stewart RE. Reliability and validity of the visual analogue scale for disability in patients with chronic musculoskeletal pain. International journal of rehabilitation research. 2008 Jun 1;31(2):165-9.
16. Begum MR, Hossain MA. Validity and reliability of visual analogue scale (vas) for pain measurement. Journal of Medical Case Reports and Reviews. 2019 Nov 8;2(11).
17. Delgado DA, Lambert BS, Boutris N, McCulloch PC, Robbins AB, Moreno MR, Harris JD. Validation of digital visual analog scale pain scoring with a traditional paper-based visual analog scale in adults. Journal of the American Academy of Orthopaedic Surgeons. Global research & reviews. 2018 Mar;2(3).
18. Joshi S, Parikh S. Prevalence of Low Back Pain, and Its Impact on Quality of Life in Post-Partum Women. Int J Recent Sci Res. 2016 Nov;7(11):14342-8.
19. Lee CP, Fu TS, Liu CY, Hung CI. Psychometric evaluation of the Oswestry Disability Index in patients with chronic low back pain: factor and Mokken analyses. Health and quality of life outcomes. 2017 October 3;15(1), 1-7.
20. Fairbank JC, Couper J, Davies JB, O'Brien JP. The Oswestry low back pain questionnaire. Physiotherapy. 1980;66:271–3.
21. Yoon HK, Kim JT, Bahk JH. Comparison between general, spinal, epidural, and combined spinal-epidural anesthesia for cesarean delivery: a network meta-analysis. International journal of obstetric anesthesia. 2019 Feb; 37, 5–15.
22. Chia YY, Lo Y, Chen YB, Liu CP, Huang WC, Wen CH. Risk of chronic low back pain among parturients who undergo cesarean delivery with neuraxial anesthesia: a nationwide population-based retrospective cohort study. Medicine. 2016 Apr;95(16).
23. MacArthur C, Lewis M, Knox EG, Crawford JS. Epidural anaesthesia and long-term backache after childbirth. British Medical Journal. 1990 Jul 7;301(6742):9-12.
24. Tariq S, Afzal A, Abid S, Ans M, Jabbar S, Azam S. Prevalence of Chronic Low Back Pain Due to Cesarean Section Under Spinal Anesthesia Among the Housewives in Faisalabad District. Biol Med (Aligarh). 2020; 12:472.
25. Standl T, Eckert S, Esch JS. Postoperative complaints after spinal and thiopentone isoflurane anaesthesia in patients undergoing orthopaedic surgery Spinal versus general anaesthesia. Acta anaesthesiologica scandinavica. 1996 Feb;40(2):222-6.
26. Solomon D, Roopchand-Martin S. How well do pain scales correlate with each other and with the Oswestry Disability Questionnaire? International Journal of Therapy and Rehabilitation. 2011; 18(2), 108-113.
27. Chan ST. Incidence of back pain after lumbar epidural anaesthesia for non-obstetric surgery--a preliminary report. The Medical journal of Malaysia. 1995 Sep 1;50(3):241-5.
28. Malevic A, Jatuzis D, Paliulyte V. Epidural analgesia and back pain after labor. Medicina. 2019 Jul;55(7):354.
29. Algarni, AS, Ghorbel S, Jones JG, Guermazi M. Validation of an Arabic version of the Oswestry index in Saudi Arabia. Annals of physical and rehabilitation medicine. 2014 Aug 4;57(9-10), 653–663.
30. McGorry RW, Webster BS. The relation between pain intensity, disability, and the episodic nature of chronic and recurrent low back pain: Spine. 2000; 25(7):834-41.