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Date of Search: 03 Aug 2017

Sources Searched: Medline, Embase, CINAHL.

Facial Injuries and Forceps Delivery

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Evidence Summary

- Facial injuries associated with forceps delivery include facial nerve palsies, lacerations and ocular trauma.
- Use of forceps is associated with fewer failed vaginal deliveries compared to vacuum extraction, but with increased maternal vaginal and perineal trauma and neonatal facial injury.
- Soft forceps may have a lower rate of facial injury than regular forceps. This is however based on results from trials with unclear and/or lacking concealment.

Sources: O'Mahony F, Hofmeyr GJ, Menon V. Choice of instruments for assisted vaginal delivery. Cochrane Database of Systematic Reviews 2010, Issue 11. Art. No.: CD005455. DOI: 10.1002/14651858.CD005455.pub2 URL:

<http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD005455.pub2/pdf>

DynaMed Plus [Internet]. Ipswich (MA): EBSCO Information Services. 1995 - . Record No. 114686, Assisted vaginal delivery (instrumental delivery); [updated 2016 Aug 08,04/08/2017]; [about 18 screens]. Available from

<http://www.dynamed.com/login.aspx?direct=true&site=DynaMed&id=114686> . Registration and login required.

1. Naegele Forceps Delivery and Association between Morbidity and the Number of Forceps Traction Applications: A Retrospective Study.

Author(s): Matsumoto, Naoki; Takenaka, Toshifumi; Ikeda, Nobuyuki; Yazaki, Satoshi; Sato, Yuichi

Source: Journal of pregnancy; 2015; vol. 2015 ; p. 483195

Publication Date: 2015

Publication Type(s): Journal Article

PubMedID: 26425369

Available in full text at [Journal of Pregnancy](#) - from National Library of Medicine

Abstract:OBJECTIVETo present the method of Naegele forceps delivery clinically practiced by the lead author, its success rate, and morbidity and to evaluate the relationship between morbidity and the number of forceps traction applications.METHODSNaegele forceps delivery was performed when the fetal head reached station +2 cm, the forceps were applied in the maternal pelvic application, and traction was slowly and gently performed. In the past two years, Naegele forceps delivery was attempted by the lead author in 87 cases, which were retrospectively reviewed.RESULTSThe numbers of traction applications were one in 64.7% of cases, two in 24.7%, and three or more in 10.7%. The success rate was 100%. No severe morbidity was observed in mothers or neonates. Neonatal facial injury occurred most commonly in cases with fetal head malrotation, elevated numbers of traction applications, and maternal complications. Umbilical artery acidemia most commonly occurred in cases with nonreassuring fetal status. The significant crude odds ratio for three or more traction applications was 20 in cases with malrotation.CONCLUSION Naegele forceps delivery has a high success rate, but multiple traction applications will sometimes be required, particularly in cases with malrotation. Malrotation and elevated numbers of traction applications may lead to neonatal head damage.

Database: Medline

2. Forceps Delivery-Related Ophthalmic Injuries: A Case Series.

Author(s): McAnena, Lisa; O'Keefe, Michael; Kirwan, Caitriona; Murphy, John

Source: Journal of pediatric ophthalmology and strabismus; 2015; vol. 52 (no. 6); p. 355-359

Publication Date: 2015

Publication Type(s): Case Reports Journal Article

PubMedID: 26584749

Available in full text at [Journal of Pediatric Ophthalmology and Strabismus](#) - from ProQuest

Abstract:PURPOSETo report a case series of neonatal ophthalmic trauma induced by forceps-assisted vaginal delivery.METHODSRetrospective, non-comparative case series focusing on presentation and long-term outcomes.RESULTSEleven cases of ophthalmic injury secondary to forceps delivery (7 male, 4 female) from October 1997 to July 2014 are presented. Eight cases were born at a single center from January 2006 to July 2014, a rate of 1 case per 413 forceps-assisted deliveries. Follow-up ranged from 2 months to 17 years. Three cases had self-limiting eyelid bruising only. There was one case each of vitreous hemorrhage and hyphema, which resolved spontaneously. There were two cases of oculomotor nerve palsy associated with intracranial hemorrhage, both requiring surgical ptosis repair at 3 and 5 weeks old, respectively. There was one case of facial nerve palsy. Four cases sustained corneal trauma, manifesting as corneal edema in three cases at birth. The fourth of these cases presented at age 4.5 years with corneal scarring and amblyopia. Resulting astigmatism in these four cases ranged from 3.5 to 7.5 diopters and best-corrected visual acuity ranged from 6/12 to 6/36 Snellen at last follow-up.CONCLUSIONSAlthough rare, ophthalmic trauma secondary to forceps-assisted delivery can result in a wide spectrum of anatomical injuries, which

may be self-limiting or cause significant long-term visual impairment. The authors recommend awareness among obstetricians and pediatricians of these injuries, and referral to the ophthalmologist of any newborn delivered by forceps with evidence of compressive trauma such as scalp or eyelid bruising to rule out the presence of more serious ophthalmic trauma.

Database: Medline

3. "Globe Luxation": A Dramatic Complication of Forceps Assisted Vaginal Delivery

Author(s): Khanduja S.; Aggarwal S.; Solanki S.; Sachdeva S.; Khanduja N.

Source: Indian Journal of Pediatrics; Dec 2015; vol. 82 (no. 8); p. 759-760

Publication Date: Dec 2015

Publication Type(s): Letter

PubMedID: 25502798

Available in full text at [Indian Journal of Pediatrics, The](#) - from Springer Link Journals

Available in full text at [Indian Journal of Pediatrics](#) - from Free Access Content

Database: EMBASE

4. Severe visual loss following obstetric forceps delivery-related ocular trauma in a neonate.

Author(s): Shah, K; Roy, R; Guha, S; Bhargava, M; Shah, S V; Lobo, A; Das, D; Majumder, A K

Source: Journal of obstetrics and gynaecology : the journal of the Institute of Obstetrics and Gynaecology; May 2015; vol. 35 (no. 4); p. 415

Publication Date: May 2015

Publication Type(s): Case Reports Journal Article

PubMedID: 25356829

Database: Medline

5. Obstetric forceps injury mimicking unilateral congenital glaucoma.

Author(s): Mandal, Anil K; Gothwal, Vijaya K

Source: Archives of disease in childhood. Fetal and neonatal edition; Jul 2014; vol. 99 (no. 4); p. F308

Publication Date: Jul 2014

Publication Type(s): Case Reports Journal Article

PubMedID: 24391144

Available in full text at [Fetal and Neonatal](#) - from BMJ Journals The NHS Collection

Database: Medline

6. Outcome following sequential instrumental delivery versus single instrument use, second stage caesarean section (CS)

Author(s): Rudra T.; Shah R.

Source: BJOG: An International Journal of Obstetrics and Gynaecology; Jun 2013; vol. 120 ; p. 210-211

Publication Date: Jun 2013

Publication Type(s): Conference Abstract

Available in full text at [BJOG: An International Journal of Obstetrics and Gynaecology](#) - from John Wiley and Sons

Abstract:Objective To evaluate the maternal and perinatal morbidity and mortality associated with the use of sequential instruments at assisted vaginal delivery. Method Deliveries requiring forceps after failed vacuum were identified retrospectively at Northwick Park Hospital between January 2011 and September 2012; 88 cases were identified. Maternal outcomes included postpartum haemorrhage, perineal tear or sepsis. Neonatal complications included low Apgar scores, abnormal cord gases, facial injury, shoulder injury, cephalohaematoma, seizures or admission to NICU. This group was then compared to use of forceps alone, vacuum alone, caesarean section (CS) deliveries after failed instrumentation and second stage CS without instrumentation. Cases were matched for parity. Results The incidence of all categories of PPH compared to failed instrumentation had an OR of 0.08 (95% CI 0.0268-0.2378, $P < 0.0001$), compared to CS gave OR of 0.22 (95% CI 0.0991- 0.4776, $P = 0.0001$), comparing with forceps use gave OR of 1.99 (95% CI 1.0915-3.6162, $P = 0.0247$) and to Kiwi cup gave OR of 4.60 (95% CI 2.4337-8.6792, $P < 0.0001$). Analysing all tears or incision extensions there was no difference except when compared with births from second stage CS OR 9.8 (95% CI 4.1667- 22.8151, $P < 0.0001$). When considering third/fourth degree tears alone, sequential instruments made the women at higher risk in all groups except for forceps deliveries. (Eleven tears in sequential instrumentation.) Sepsis in all groups showed no statistically significant difference. For low Apgar at 5 minutes, shoulder dystocia or injury, any other complications and NICU admissions the groups showed no significant differences. The only neonatal outcome showing statistical significance was the cord pH; use of sequential instrument had OR of 0.3 (95% CI 0.1612-0.6006, $P = 0.0005$) of having cord pH < 7.25 when compared to those having LSCS after failed operative delivery. Comparison with all other groups showed no statistical difference. Conclusions Sequential instruments expose mothers to more risk than neonates. There is higher risk of third/fourth degree tears when compared with the kiwi and those undergoing CS; for PPH rates compared to single instrument were comparable and significantly less than either of the CS groups. Though various guidance have advocated that sequential instruments should be avoided it is best left to the experienced to choose the appropriate instruments or to attempt CS considering the complications of CS in second stage.

Database: EMBASE

7. Transient erythematous rash on the cheek mimicking food allergy.

Author(s): Chiang, Y Z; Al-Niaimi, F; Yell, J

Source: Clinical and experimental dermatology; Jan 2012; vol. 37 (no. 1); p. 89-90

Publication Date: Jan 2012

Publication Type(s): Case Reports Journal Article

PubMedID: 22182440

Available in full text at [Clinical and Experimental Dermatology](#) - from John Wiley and Sons

Database: Medline

8. Mode of delivery in nulliparous women and neonatal intracranial injury.

Author(s): Werner, Erika F; Janevic, Teresa M; Illuzzi, Jessica; Funai, Edmund F; Savitz, David A; Lipkind, Heather S

Source: Obstetrics and gynecology; Dec 2011; vol. 118 (no. 6); p. 1239-1246

Publication Date: Dec 2011

Publication Type(s): Comparative Study Journal Article

PubMedID: 22105252

Available in full text at [Obstetrics and Gynecology](#) - from Ovid

Abstract:OBJECTIVE To compare neonatal neurologic complication rates of cesarean deliveries, forceps-assisted vaginal deliveries, and vacuum-assisted vaginal deliveries.METHODSData on singleton live births at 34 weeks or greater gestation born to nulliparous women from 1995 to 2003 in New York City were linked to hospital discharge data. Any diagnosis of neonatal subdural hemorrhage, intraventricular hemorrhage, seizures, scalp laceration or cephalohematoma, fracture, facial nerve palsy, brachial plexus injury, or 5-minute Apgar score of less than 7 was considered significant. Multivariable logistic regression was used to estimate associations between delivery mode and these neonatal morbidities.RESULTSForceps-assisted vaginal deliveries were associated with significantly fewer seizures and 5-minute Apgar scores less than 7 compared with vacuum-assisted vaginal deliveries and cesarean deliveries. Cesarean deliveries were linked to less subdural hemorrhages compared with forceps-assisted vaginal deliveries or vacuum-assisted vaginal deliveries. When seizure, intraventricular hemorrhage, and subdural hemorrhage were examined collectively to best predict neurologic outcome, forceps-assisted vaginal deliveries had an overall reduced risk compared with both vacuum-assisted vaginal deliveries (odds ratio [OR] 0.60, 95% confidence interval [CI] 0.40-0.90) and cesarean deliveries (OR 0.68, 95% CI 0.48-0.97). The number needed to treat to prevent one case of severe neurologic morbidity is 509 for forceps-assisted vaginal deliveries compared with vacuum-assisted vaginal deliveries and 559 for forceps-assisted vaginal deliveries compared with cesarean deliveries.CONCLUSIONCompared with vacuum-assisted vaginal delivery or cesarean delivery, a forceps-assisted vaginal delivery is associated with a reduced risk of adverse neonatal neurologic outcomes.LEVEL OF EVIDENCEII.

Database: Medline

9. Macular hole in a newborn associated with forceps delivery.

Author(s): Casillas, Malicia; Bazard, Marie-Christine; Hubert, Isabelle; Berrod, Jean-Paul

Source: Journal of pediatric ophthalmology and strabismus; Dec 2010; vol. 47

Publication Date: Dec 2010

Publication Type(s): Case Reports Journal Article

PubMedID: 21175117

Available in full text at [Journal of Pediatric Ophthalmology and Strabismus](#) - from ProQuest

Abstract:A newborn who had familial high myopia presented with bilateral dense vitreous hemorrhage after forceps delivery. Vitrectomy in the right eye revealed a macular hole surrounded by pigmented cells. After subsequent surgery, the macular hole healed and remained closed during 10 years of follow-up, but profound amblyopia persisted. Macular hole is a possible complication of forceps delivery. Vitrectomy associated with inner limiting membrane peeling and gas tamponade was effective in closing macular hole in a newborn but was unable to prevent amblyopia.

Database: Medline

10. Choice of instruments for assisted vaginal delivery.

Author(s): O'Mahony, Fidelma; Hofmeyr, G Justus; Menon, Vijay

Source: The Cochrane database of systematic reviews; Nov 2010 (no. 11); p. CD005455

Publication Date: Nov 2010

Publication Type(s): Meta-analysis Journal Article Review

PubMedID: 21069686

Available in full text at [Cochrane Library, The](#) - from John Wiley and Sons

Abstract:BACKGROUNDInstrumental or assisted vaginal birth is commonly used to expedite birth for the benefit of either mother or baby or both. It is sometimes associated with significant complications for both mother and baby. The choice of instrument may be influenced by clinical circumstances, operator choice and availability of specific instruments.OBJECTIVESTo evaluate different instruments in terms of achieving a vaginal birth and avoiding significant morbidity for mother and baby.SEARCH STRATEGYWe searched the Cochrane Pregnancy and Childbirth Group's Trials Register (31 May 2010).SELECTION CRITERIARandomised controlled trials of assisted vaginal delivery using different instruments.DATA COLLECTION AND ANALYSISTwo review authors independently assessed trial quality, extracted the data, and checked them for accuracy.MAIN RESULTSWe included 32 studies (6597 women) in this review. Forceps were less likely than the ventouse to fail to achieve a vaginal birth with the allocated instrument (risk ratio (RR) 0.65, 95% confidence interval (CI) 0.45 to 0.94). However, with forceps there was a trend to more caesarean sections, and significantly more third- or fourth-degree tears (with or without episiotomy), vaginal trauma, use of general anaesthesia, and flatus incontinence or altered continence. Facial injury was more likely with forceps (RR 5.10, 95% CI 1.12 to 23.25). Using a random-effects model because of heterogeneity between studies, there was a trend towards fewer cases of cephalhaematoma with forceps (average RR 0.64, 95% CI 0.37 to 1.11).Among different types of ventouse, the metal cup was more likely to result in a successful vaginal birth than the soft cup, with more cases of scalp injury and cephalhaematoma. The hand-held ventouse was associated with more failures than the metal ventouse, and a trend to fewer than the soft ventouse.Overall forceps or the metal cup appear to be most effective at achieving a vaginal birth, but with increased risk of maternal trauma with forceps and neonatal trauma with the metal cup.AUTHORS' CONCLUSIONSThere is a recognised place for forceps and all types of ventouse in clinical practice. The role of operator training with any choice of instrument must be emphasised. The increasing risks of failed delivery with the chosen instrument from forceps to metal cup to hand-held to soft cup vacuum, and trade-offs between risks of maternal and neonatal trauma identified in this review need to be considered when choosing an instrument.

Database: Medline

11. Traumatic facial nerve palsy in newborns: is it always iatrogenic?

Author(s): Al Tawil, Khalil; Saleem, Noura; Kadri, Hanan; Rifae, Mohamed Talal; Tawakol, Hesham

Source: American journal of perinatology; Oct 2010; vol. 27 (no. 9); p. 711-713

Publication Date: Oct 2010

Publication Type(s): Journal Article

PubMedID: 20387190

Abstract:We sought to report an updated incidence, risk factors, and outcome of traumatic facial palsy (TFP) in newborn infants born at King Abdulaziz Medical City (KAMC), Riyadh, Saudi Arabia. We performed a 12-year retrospective study at KAMC. The records of infants with the diagnosis of TFP during the study period were reviewed and compared with 148 healthy term infants born during the same study period. Among 83,067 infants delivered between January 1994 and December 2005, 29 infants were diagnosed with TFP for an incidence of 0.03%. Forceps delivery and maternal primiparity were the only significant risk factors for TFP. Only 7 (24.1%) of these infants were delivered by cesarean section. The other 22 cases of TFP (75.9%) were delivered without any forceps application. Almost all infants (93%) with TFP had spontaneous recovery within 2 months. Only one child suffered from permanent facial weakness when he was last examined at the age of 12 years. Although forceps delivery was considered the most significant risk factor, currently most of the cases occur spontaneously without forceps application. The majority of infants with TFP will recover spontaneously within the first 2 months of life.

Database: Medline

12. Facial nerve palsy in neonates secondary to forceps use.

Author(s): Duval, Melanie; Daniel, Sam J

Source: Archives of otolaryngology--head & neck surgery; Jul 2009; vol. 135 (no. 7); p. 634-636

Publication Date: Jul 2009

Publication Type(s): Multicenter Study Journal Article

PubMedID: 19620581

Available in full text at [Archives of Otolaryngology - Head and Neck Surgery](#) - from Free Access Content

Available in full text at [Archives of Otolaryngology - Head and Neck Surgery](#) - from Silverchair Information Systems

Abstract:OBJECTIVETo characterize the presentation, treatment, and outcome of neonates presenting with facial nerve palsy resulting from forceps use.DESIGNRetrospective medical chart review.SETTINGTwo tertiary care pediatric hospitals.PATIENTSNeonates with facial nerve palsy caused by forceps use born during the period of April 1, 1989, to April 1, 2005.MAIN OUTCOME MEASUREResolution of facial nerve palsy.RESULTSTwenty-eight cases of facial nerve palsy caused by forceps use were identified. The palsy was classified as mild to moderate according to the House-Brackman scale. Except in 1 neonate, no treatment was initiated in any of the patients. All 21 neonates with adequate long-term follow-up recovered fully after an average period of 24 days.CONCLUSIONBecause facial nerve palsy caused by forceps use is generally mild and is associated with a favorable outcome, treatment with corticosteroids or surgery is generally not required.

Database: Medline

13. Head injuries after instrumental vaginal deliveries.

Author(s): Doumouchtsis, Stergios K; Arulkumaran, Sabaratnam

Source: Current opinion in obstetrics & gynecology; Apr 2006; vol. 18 (no. 2); p. 129-134

Publication Date: Apr 2006

Publication Type(s): Journal Article Review

PubMedID: 16601472

Available in full text at [Current Opinion in Obstetrics and Gynecology](#) - from Ovid

Abstract:**PURPOSE OF REVIEW**The types, mechanisms and clinical manifestations of head injuries (extracranial, cranial and intracranial) after instrumental delivery are described along with current evidence of their prevention and management.**RECENT FINDINGS**Asymptomatic subdural hematomas can occur in up to 6.1% of uncomplicated vaginal deliveries. Maternal nulliparity, incorrect placement of vacuum extraction cup and failed vacuum extraction are predisposing factors to subgaleal hemorrhage. Injuries associated with the vacuum devices may be minimized if the recommended limits for a safe traction force are not exceeded. There is no difference in the incidence of scalp trauma between vacuum deliveries by a rigid plastic cup (Omnicut) and the standard, silastic cup. The use of a metal cup may increase the occurrence of head injuries. Protective covers over forceps reduce the rates of neonatal facial abrasions and skin bruises. There is no difference in the incidence of cephalhematoma comparing a sequential operative vaginal delivery and a caesarean section following a failed vacuum delivery.**SUMMARY**Instrumental vaginal deliveries carry substantial risks. Only practitioners who are adequately trained or are under supervision should undertake instrumental delivery. The mode of intervention needs to be individualized after consideration of the operator's skills and experience and the clinical circumstances.

Database: Medline

14. Soft forceps.

Author(s): Roshan, D F; Petrikovsky, B; Sichinava, L; Rudick, B J; Rebarber, A; Bender, S D

Source: International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics; Mar 2005; vol. 88 (no. 3); p. 249-252

Publication Date: Mar 2005

Publication Type(s): Randomized Controlled Trial Clinical Trial Journal Article

PubMedID: 15733876

Available in full text at [Intl Jrnal Gynecology and Obstet](#) - from John Wiley and Sons

Abstract:**OBJECTIVE**The risk of maternal and fetal trauma and, chiefly, the fear of law suits, have contributed to a significant decline in rates of forceps-assisted deliveries and an increase in rates of cesarean sections, especially in the United States. Our experience with gas-sterilized forceps blades covered with a soft rubber coating--the "soft" forceps--is described.**METHOD**Ninety-six women who required a forceps-assisted delivery for standard indications were randomly allocated to 2 groups. There were 51 women in the regular forceps group and 45 women in the soft forceps group. Low forceps delivery with a Simpson instrument was used in all cases. The groups were compared for fetal injury.**RESULT**The rates of severe facial abrasion and minimal marking were 4.1% and 61%, respectively, in the regular forceps group and 1.9% and 34% in the soft forceps group.**CONCLUSION**The soft forceps may reduce the rates of neonatal facial abrasion and skin bruises. The forceps should be further perfected, as well as vacuum extractors; they should both continue to be part of the obstetrician's armamentarium.

Database: Medline

15. Management of mandibular fracture using open reduction and internal fixation in a neonate: case report.

Author(s): Serel, Savas; Can, Zeki; Ersoy, Atilla; Sen, Zeynep

Source: Journal of oral and maxillofacial surgery : official journal of the American Association of Oral and Maxillofacial Surgeons; Mar 2005; vol. 63 (no. 3); p. 396-399

Publication Date: Mar 2005

Publication Type(s): Case Reports Journal Article

PubMedID: 15742294

Database: Medline

16. Immediate maternal and neonatal effects of forceps and vacuum-assisted deliveries.

Author(s): Johnson, Jennifer H; Figueroa, Reinaldo; Garry, David; Elimian, Andrew; Maulik, Dev

Source: Obstetrics and gynecology; Mar 2004; vol. 103 (no. 3); p. 513-518

Publication Date: Mar 2004

Publication Type(s): Comparative Study Journal Article

PubMedID: 14990415

Available in full text at [Obstetrics and Gynecology](#) - from Ovid

Abstract:OBJECTIVETo estimate the differences in immediate maternal and neonatal effects of forceps and vacuum-assisted deliveries.METHODSWe conducted a medical record review of all forceps and vacuum-assisted deliveries that occurred from January 1, 1998, to August 30, 1999, at Winthrop-University Hospital. Maternal demographics and delivery characteristics were recorded. Maternal outcomes, such as use of episiotomy and presence of lacerations, were studied. Neonatal outcomes evaluated were Apgar scores, neonatal intensive care unit admissions, cephalohematomas, instrument marks and bruising, and caput and molding.RESULTSO f 508 operative vaginal deliveries, 200 were forceps and 308 were vacuum assisted. Forceps were used more often than vacuum for prolonged second stage of labor ($P = .001$). There was a higher rate of epidural ($P = .02$) and pudendal ($P < .001$) anesthesia, episiotomies ($P = .01$), maternal third- and fourth-degree perineal ($P < .001$) and vaginal lacerations ($P = .004$) with the use of forceps, whereas periurethral lacerations were more common in vacuum-assisted ($P = .026$) deliveries. More instrument marks and bruising ($P < .001$) were found in the neonates delivered by forceps, whereas there was a greater incidence of cephalohematomas ($P = .03$) and caput and molding ($P < .001$) in the neonates delivered with vacuum. Multivariable logistic regression analysis showed that forceps use was associated with an increase in major perineal and vaginal tears (odds ratio [OR] 1.85; 95% confidence interval [CI] 1.27, 2.69; $P = .001$), an increase in instrument marks and bruising (OR 4.63; 95% CI 2.90, 7.41; $P < .001$) and a decrease in cephalohematomas (OR 0.49; 95% CI 0.29, 0.83; $P = .007$) compared with the vacuum.CONCLUSIONSMaternal injuries are more common with the use of forceps. Neonates delivered with forceps have more facial injuries, whereas neonates delivered with vacuum have more cephalohematomas.LEVEL OF EVIDENCEII-3

Database: Medline

17. Horizontal Descemet's membrane break due to birth trauma

Author(s): Agrawal A.; Azuara-Blanco A.

Source: CME Journal Ophthalmology; 2002; vol. 6 (no. 1); p. 25-26

Publication Date: 2002

Publication Type(s): Article

Abstract:We report an unusual case of horizontal corneal Descemet's membrane break due to birth trauma. The patient had a difficult birth with trauma to her right eye and poor vision. However unlike the reports in literature, which describe these breaks to have a characteristic vertical or vertically oblique orientation in birth trauma, the breaks in our patient were horizontal. No other cause was found for these Descemet's breaks.

Database: EMBASE

18. The effect of sequential use of vacuum and forceps for assisted vaginal delivery on neonatal and maternal outcomes.

Author(s): Gardella, C; Taylor, M; Benedetti, T; Hitti, J; Critchlow, C

Source: American journal of obstetrics and gynecology; Oct 2001; vol. 185 (no. 4); p. 896-902

Publication Date: Oct 2001

Publication Type(s): Comparative Study Journal Article Research Support, U.s. Gov't, P.h.s.

PubMedID: 11641674

Abstract:OBJECTIVETo determine the risk of neonatal and maternal disease associated with the sequential use of vacuum and forceps compared with spontaneous vaginal delivery.STUDY DESIGNUsing Washington state birth certificate data linked to hospital discharge records, we compared 3741 vaginal deliveries by both vacuum and forceps, 3741 vacuum deliveries, and 3741 forceps deliveries to 11,223 spontaneous vaginal deliveries.RESULTSCompared with spontaneous vaginal deliveries, deliveries by sequential use of vacuum and forceps had significantly higher rates of intracranial hemorrhage (relative risk [RR], 3.9; 95% confidence interval [CI], 1.5 to 10.1), brachial plexus (RR, 3.2; 95% CI, 1.6 to 6.4), facial nerve injury (RR, 13.3; 95% CI, 4.7 to 37.7), seizure (RR, 13.7; 95% CI, 2.1 to 88.0), depressed 5-minute Apgar score (RR, 3.0; 95% CI, 2.2 to 4.0), assisted ventilation (RR, 4.8; 95% CI, 2.1 to 11.0), fourth-degree (RR, 11.4; 95% CI, 6.4 to 20.1 among multiparous women) and other lacerations, hematoma (RR, 6.2; 95% CI, 2.1 to 18.1 among multiparous women), and postpartum hemorrhage (RR, 1.6; 95% CI, 1.3 to 2.0). The relative risk of sequential vacuum and forceps use was greater than the sum of the individual relative risks of each instrument for intracranial hemorrhage, facial nerve injury, seizure, hematoma, and perineal and vaginal lacerations.CONCLUSIONSequential use of vacuum and forceps is associated with increased risk of both neonatal and maternal injury.

Database: Medline

19. Choroidal rupture associated with forceps delivery.

Author(s): Estafanous, M F; Seeley, M; Traboulsi, E I

Source: American journal of ophthalmology; Jun 2000; vol. 129 (no. 6); p. 819-820

Publication Date: Jun 2000

Publication Type(s): Case Reports Journal Article

PubMedID: 10927004

Available in full text at [American Journal of Ophthalmology](#) - from ProQuest

Abstract: PURPOSE To report a case of choroidal rupture associated with forceps delivery. METHOD Case report. RESULTS We examined a 4-year-old boy with a history of a retinal scar in the right eye. The child was delivered with forceps and had bitemporal ecchymoses at birth. There was no other history of trauma. Ophthalmoscopic examination of the right eye with a vision of counting fingers revealed linear scars from choroidal rupture in the posterior pole, including one through the macula. Anterior segment examination was normal. Examination of the left eye was completely normal. CONCLUSION Ocular trauma associated with forceps delivery may rarely result in choroidal ruptures, even in the absence of external signs of injury, such as breaks in Descemet membrane.

Database: Medline

20. Ankylosis of the temporomandibular joint as a complication of forceps delivery: report of a case.

Author(s): Obiechina, A E; Arotiba, J T; Fasola, A O

Source: West African journal of medicine; 1999; vol. 18 (no. 2); p. 144-146

Publication Date: 1999

Publication Type(s): Case Reports Journal Article

PubMedID: 10504875

Abstract: A two and half years old girl presented with severe limitation of mouth opening, facial asymmetry, inability to masticate, and proclination of the anterior maxillary and mandibular teeth. There was no history of facial trauma, infection or neonatal fevers. A diagnosis of bony ankylosis of the TMJ was made following a confirmation of delivery by means of obstetrics forceps during a difficult labour. The causes of TMJ ankylosis and the sequelae are highlighted.

Database: Medline

21. Birth trauma in the head and neck.

Author(s): Hughes, C A; Harley, E H; Milmoe, G; Bala, R; Martorella, A

Source: Archives of otolaryngology--head & neck surgery; Feb 1999; vol. 125 (no. 2); p. 193-199

Publication Date: Feb 1999

Publication Type(s): Journal Article

PubMedID: 10037286

Available in full text at [Archives of Otolaryngology - Head and Neck Surgery](#) - from Free Access Content

Abstract:OBJECTIVETo review the medical records of neonates found to have birth-associated trauma of the head and neck region. To describe the anomalies, physical findings, and possible sequelae of these injuries and to bring attention to the cause of mechanical birth injury as a potential cause of anomalies in the infant.DESIGNCase-controlled retrospective chart review of a cohort of patients identified with birth-associated trauma to the head and neck from January 1, 1991, to March 1, 1997.SETTINGAcademic tertiary care medical center.PATIENTSMedical records from infants born or transferred with the diagnosis of birth trauma were reviewed. Medical records from a control group of 148 uninjured full-term infants born during the same period were reviewed for comparison. Neonatal charts, including labor and delivery records, were analyzed.MAIN OUTCOME MEASURESEach patient record was reviewed for diagnosis, associated injuries, maternal statistics, gestational age, birth weight and size, Apgar scores, type of delivery, length of labor, complications of labor, and length of hospital stay.RESULTSOne hundred sixty-four infants (incidence, 0.82%; prevalence, 9.5 per 1000 live-births) were identified with 175 birth-associated injuries to the head and neck. The most common finding was cephalhematoma (56.6%). Other findings included scalp and/or facial lacerations (12%) and hematomas (2.3%), facial nerve paresis (8.6%), brachial plexus injuries (5.1%), clavicular (9.1%) and skull fracture (2.9%), nasal septal dislocation (0.6%), and phrenic (1.7%) and laryngeal nerve injuries (0.6%). Risk factors included birth weight ($P = .001$), vaginal delivery ($P = .001$), primiparity ($P = .02$), forceps delivery ($P = .005$), vacuum delivery ($P = .001$), infants categorized as large for gestational age ($P = .02$), and male infant sex ($P = .03$). Apgar scores were also noted to be lower in our study population ($P = .001$). Risk factors for specific types of injuries varied. However, facial nerve paralysis was associated with multiple birth injuries ($P = .001$), and 2 of 3 phrenic nerve injuries co-occurred with brachial plexus injuries. Correlation coefficients for factors such as maternal age, gravidity, and race were low.CONCLUSIONBirth-associated head and neck trauma is rare. However, mechanical birth-associated trauma must be considered when assessing anomalies, injuries, respiratory difficulty, or feeding difficulties in the neonate or infant. A comprehensive approach is required to diagnose and manage these patients.

Database: Medline

22. Case report: Unilateral combined facial nerve and brachial plexus palsies in a neonate following a midlevel forceps delivery

Author(s): De Chalain T.M.B.; Clarke H.M.; Curtis C.G.

Source: Annals of Plastic Surgery; 1997; vol. 38 (no. 2); p. 187-190

Publication Date: 1997

Publication Type(s): Article

PubMedID: 9043592

Abstract: A case is described in which the 2.7-kg fetus of a nonobese primigravid patient, delivered by midlevel forceps manipulation sustained neurapraxias of both the marginal mandibular branch of the seventh cranial nerve and the upper trunks of the ipsilateral brachial plexus. The pregnancy was uneventful, but labor was complicated by an occipitoposterior presentation and a prolonged second stage. Examination of the neonate revealed bruising and skin markings consistent with injury by obstetric forceps and the anatomic location of these marks suggested that cervical and mandibular compression from the forceps, rather than traction by the accoucheur, would account for the observed findings. A review of the English language literature over the past 30 years revealed only four cases in which a combination of facial nerve and brachial plexus injuries could both be linked to obstetric instrumentation.

Database: EMBASE

23. Birth trauma: A five-year review of incidence and associated perinatal factors

Author(s): Perlow J.H.; Wigton T.; Hart J.; Strassner H.T.; Nageotte M.P.; Wolk B.M.

Source: Journal of Reproductive Medicine for the Obstetrician and Gynecologist; Oct 1996; vol. 41 (no. 10); p. 754-760

Publication Date: Oct 1996

Publication Type(s): Article

PubMedID: 8913978

Abstract: **OBJECTIVE:** To determine the current incidence of clavicular fracture (CF) facial nerve injury (FNI) and brachial plexus injury (BPI) and identify the existence, if any, of associated perinatal factors with each injury. **STUDY DESIGN:** A case-controlled study design was selected and the study conducted for births between January 1, 1985 and January 1, 1990, at Christ Hospital and Medical Center, a tertiary care center with level III perinatal services in suburban Chicago. Among a population of 19,370 consecutive deliveries, we identified the occurrences of CF, FNI and BPI by database search, and maternal and neonatal chart reviews. A control group was randomly selected. Maternal, labor, delivery and neonatal variables were then compared between the birth trauma and control groups for each specific injury. **RESULTS:** The incidence per 1,000 live births and per 1,000 live-born cephalic singletons delivered vaginally for CF was 4.5 and 5.7; for FNI, 0.6 and 0.7; and for BPI, 0.9 and 1.1, respectively. To varying degrees, the data demonstrate that the occurrences of these injuries are associated significantly more often with prolonged gestation, epidural anesthesia, prolonged second stage of labor, oxytocin use, forceps delivery, shoulder dystocia, macrosomia, low Apgar scores and a previous maternal obstetric history of macrosomia when compared to controls. Other significantly associated variables include the presence of meconium in labor and neonatal hyperbilirubinemia. Despite the presence of multiple perinatal factors that are individually associated statistically with the injured groups, multiple logistic regression analysis predicted 44.2% of CF's, none of the FNIs and only 19% of the BPIs. **CONCLUSION:** While multiple perinatal variables are statistically associated with the specific birth injuries studied, the use of multiple logistic regression analysis shows that the ability to predict these injuries is markedly limited.

Database: EMBASE

24. Forceps and vacuum injuries to the cornea: histopathologic features of twelve cases and review of the literature.

Author(s): Honig, M A; Barraquer, J; Perry, H D; Riquelme, J L; Green, W R

Source: Cornea; Sep 1996; vol. 15 (no. 5); p. 463-472

Publication Date: Sep 1996

Publication Type(s): Journal Article Review

PubMedID: 8862922

Abstract: Histopathologic and ultrastructural features were examined from 11 cases of corneal injury from obstetrical forceps and one case from vacuum extraction. Four major types of histopathologic features were observed. Type I (n = 4) included large tears of Descemet's membrane with a fragment of Descemet's membrane extending into the anterior chamber at one end of the tear and scroll formation at the other end. Type II (n = 6) consisted of scrolls of Descemet's membrane at each margin of the original break. Type III (n = 2) included those with small breaks in Descemet's membrane and healing by fibrosis at and posterior to the original tear. Type IV (n = 1) contained a small break in Descemet's membrane with minimal fibrosis. Transmission electron microscopy revealed Descemet's scrolls and retrocorneal fibrous tissue. Scanning electron microscopy revealed folds in Descemet's membrane and attenuation or absence of endothelium. Spindle- and stellate-shaped cells and pigment granules were present in the area of the tear in most cases. A review of the literature is presented.

Database: Medline

25. Is permanent congenital facial palsy caused by birth trauma?

Author(s): Laing, J H; Harrison, D H; Jones, B M; Laing, G J

Source: Archives of disease in childhood; Jan 1996; vol. 74 (no. 1); p. 56-58

Publication Date: Jan 1996

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article

PubMedID: 8660050

Available in full text at [Archives of Disease in Childhood](#) - from National Library of Medicine

Abstract: **OBJECTIVE** To study the relation between traumatic birth and the development of permanent facial palsy in the newborn. **DESIGN** Retrospective case control study of children with 'congenital' facial palsy. **SETTING** Two tertiary referral centres for patients with facial palsy. **SUBJECTS** 61 children with established facial palsy. **MAIN OUTCOME MEASURES** Odds ratios of recognised factors for birth injury: maternal primiparity, high birth weight, and the use of obstetric forceps at delivery. **RESULTS** 13.2% of those studied had forceps assisted delivery compared to 10.2% in the normal population (odds ratio 1.34; 95% confidence intervals 0.61 to 2.97) 39.6% were born to primiparae compared to a national rate of 36.7% (1.13; 0.65 to 1.96) and only 18.9% weighed more than 3500 g at birth (0.37; 0.19 to 0.74). **CONCLUSIONS** There is no association between the development of permanent 'congenital' facial palsy and recognised risk factors for birth injury. These data suggest an intrauterine rather than a traumatic aetiology.

Database: Medline

26. Vaginal delivery from the persistent occiput posterior position: Influence on maternal and neonatal morbidity

Author(s): Pearl M.L.; Roberts J.M.; Laros R.K.; Hurd W.W.

Source: Journal of Reproductive Medicine for the Obstetrician and Gynecologist; 1993; vol. 38 (no. 12); p. 955-961

Publication Date: 1993

Publication Type(s): Article

PubMedID: 8120853

Abstract:We performed a retrospective study of 564 vaginal occiput posterior (OP) deliveries to investigate the influence of this position on maternal and fetal morbidity. The cases were compared to 1,068 controls matched for race, parity and delivery method. The OP group had a higher incidence of severe perineal laceration and episiotomy than the occiput anterior (OA) group. Within the OP group, operative delivery was associated with a higher incidence of severe perineal laceration, vaginal laceration and episiotomy than was spontaneous delivery. Similarly, the OP group delivered by forceps had a higher incidence of severe perineal lacerations, vaginal lacerations and episiotomy than those delivered by vacuum extraction. Mediolateral episiotomy was associated with a lower incidence of severe perineal lacerations than median episiotomy during delivery from the OP position. The infants delivered from the OP position had a higher incidence of Erb's and facial nerve palsy than did those delivered from the OA position. All these injuries occurred following forceps delivery. Vaginal delivery from the persistent OP position is associated with increased maternal morbidity, and operative vaginal delivery from this position is associated with increased neonatal morbidity.

Database: EMBASE

27. A randomised prospective study comparing the new vacuum extractor policy with forceps delivery

Author(s): Johanson R.B.; Rice C.; Doyle M.; Arthur J.; Anyanwu L.; Ibrahim J.; Warwick A.; Redman C.W.E.; O'Brien P.M.S.

Source: British Journal of Obstetrics and Gynaecology; 1993; vol. 100 (no. 6); p. 524-530

Publication Date: 1993

Publication Type(s): Article

PubMedID: 8334086

Abstract:Objective. To compare assisted vaginal delivery by forceps with delivery by vacuum extractor, where a new vacuum extractor policy was employed which dictated the cup to be used in specific situations. Design. Multicentre randomised controlled trial. Setting. Four district general hospitals in the West Midlands. Subjects. Six hundred-seven women requiring assisted vaginal delivery, of whom 296 were allocated to vacuum extractor delivery and 311 to forceps. Main outcome measures. Delivery success rate, maternal perineal and vaginal injuries, maternal anaesthetic requirements, neonatal scalp and facial injuries. Results. Of the vacuum extractor group, 85% were delivered by the allocated instrument compared to 90% in the forceps group (odds ratio (OR) 0.64; 95% confidence intervals (CI) 0.4-1.04). However, more women in the vacuum extractor group were delivered vaginally (98%) than in the forceps group (96%). There were significantly fewer women with anal sphincter damage or upper vaginal extensions in the vacuum extractor group (11% vs 17%, OR 0.6; 95% CI, 0.38-0.97). There were significantly fewer women in the vacuum extractor group requiring epidural or spinal anaesthetics (25.4% vs 32.7%, OR 0.69; 95% CI 0.49-0.99) or general anaesthetics (1% vs 4%, OR 0.17; 95% CI 0.04-0.76). Although there were significantly more

babies in the vacuum extractor group with cephalhaematoma (9% vs 3%, OR 3.3; 95% CI 1.4-7.4) there were fewer babies in the vacuum extractor group with other facial injuries. There were three babies in the forceps group with unexplained neonatal convulsions. Conclusions. Assisted vaginal delivery using the new vacuum extractor policy is associated with significantly less maternal trauma than with forceps. Further studies are required to assess neonatal morbidity adequately.

Database: EMBASE

28. Contralateral occipital depression related to obstetric forceps injury to the eye

Author(s): McDonald M.B.; Burgess S.K.

Source: American Journal of Ophthalmology; 1992; vol. 114 (no. 3); p. 318-321

Publication Date: 1992

Publication Type(s): Article

PubMedID: 1524122

Abstract:Obstetric forceps pressure strong enough to leave a periorbital depression and corneal injury would probably be severe enough to leave an occipital depression from the opposite forceps blade. The presence of a depression at the correct occipital position would support the diagnosis of forceps injury when the birth history is unknown and the cornea has decompensated enough to make observation of the Descemet's membrane scrolls difficult. We studied six patients with known or suspected obstetric forceps injury to the cornea. Complete ocular examinations included examination for periorbital forceps depressions and posterior skull depressions 180 degrees from the affected cornea (which correlates with the opposite blade of the forceps). All of the patients with Descemet's scrolls had posterior skull depressions. This method of palpation for a contralateral skull depression may assist in the diagnosis of forceps-induced corneal decompensation.

Database: EMBASE

29. External ocular trauma in instrumental and normal deliveries.

Author(s): Holden, R; Morsman, D G; Davidek, G M; O'Connor, G M; Coles, E C; Dawson, A J

Source: British journal of obstetrics and gynaecology; Feb 1992; vol. 99 (no. 2); p. 132-134

Publication Date: Feb 1992

Publication Type(s): Comparative Study Clinical Trial Journal Article

PubMedID: 1554665

Abstract:OBJECTIVETo compare the occurrence of external ocular trauma in instrumental and normal deliveries.DESIGNProspective controlled study.SETTINGUniversity Hospital of Wales, Cardiff.SUBJECTS133 babies born consecutively with the use of forceps and 133 control babies born without instrumentation to women matched for parity.INTERVENTIONExternal ocular examination.MAIN OUTCOME MEASUREThe presence within 24 h of birth of corneal oedema, corneal abrasion, conjunctival chemosis, subconjunctival haemorrhage and lid oedema.RESULTSLid oedema and multiple minor external ocular trauma occurred in 52 and 22 babies, respectively, in the instrumental delivery group and in 13 and 8 babies, respectively in the control group (P less than 0.001). Corneal abrasion occurred in two babies and corneal oedema in one baby after forceps delivery but in none of the control group. No more serious injuries occurred. All injuries resolved without long term sequelae.CONCLUSIONThe frequency of sight threatening corneal trauma in instrumental deliveries is low. Specialist ophthalmic screening of these babies is not justified.

Database: Medline

30. Maternal and neonatal effects of outlet forceps delivery compared with spontaneous vaginal delivery in term pregnancies

Author(s): Yancey M.K.; Herpolsheimer A.; Jordan G.D.; Benson W.L.; Brady K.

Source: Obstetrics and Gynecology; 1991; vol. 78 (no. 4); p. 646-650

Publication Date: 1991

Publication Type(s): Article

PubMedID: 1923169

Abstract:Previous retrospective studies have suggested that the prophylactic use of outlet forceps has a beneficial impact on the neonate because it shortens the second stage of labor and decreases the incidence of neonatal hypoxia. The purpose of this study was to compare the immediate maternal and neonatal effects of outlet forceps delivery (N = 165) with spontaneous vaginal delivery (N = 168) in term parturients. Subjects were randomized to the study or control group immediately before delivery. There were 88 nulliparas and 77 multiparas in the forceps delivery group and 90 and 78, respectively, who delivered spontaneously, a nonsignificant difference. There were no significant difference in gestational age, parity, infant birth weight, length of the first and second stages of labor, use of conduction (continuous epidural) anesthesia, decrease in hematocrit values, Apgar scores, or umbilical arterial pH values between the forceps and spontaneous delivery groups. Seventeen infants in the forceps group and 16 in the control group had cephalhematoma, facial bruising, subconjunctival hemorrhage, or scalp abrasion (not significant). No neonate had fractures, nerve palsies, or intracranial hemorrhage (determined by cranial ultrasound). In the nulliparous population, significant differences were found in the use of episiotomy (93 versus 78%) and the incidence of deep perineal lacerations (24 versus 10%) with forceps compared with spontaneous delivery, respectively (P < .05). No significant differences between the groups were found in multiparas. We conclude that the use of outlet forceps in patients with uncomplicated labor has no immediate effect on the neonate. Furthermore, outlet forceps delivery does not significantly shorten the second stage of labor and is associated with an increased incidence of maternal perineal trauma.

Database: EMBASE

31. Facial nerve palsy in the newborn: incidence and outcome.

Author(s): Falco, N A; Eriksson, E

Source: Plastic and reconstructive surgery; Jan 1990; vol. 85 (no. 1); p. 1-4

Publication Date: Jan 1990

Publication Type(s): Journal Article

PubMedID: 2293714

Abstract:This study retrospectively identifies and characterizes patients with facial palsy related to birth trauma and describes the natural history of this disorder. The records of infants born with facial weakness or paralysis over a 5-year period at Brigham and Women's Hospital were reviewed, and criteria were defined to assign a diagnosis of acquired facial palsy based on birth history and documented physical examinations. The majority of patients were followed up by interview with a family member. Among 44,292 infants born between October 1, 1982 and July 31, 1987, there were 92 recorded cases of congenital seventh nerve palsy. Of these, 81 were acquired, for an incidence of 1.8 per 1000. Seventy-four of the 81 (91 percent) were associated with forceps delivery. By contrast, obstetric forceps were used in 19 percent of all deliveries during the period of the study. The average weight of subjects was 3.55 kg, versus a mean overall birth weight of 3.23 kg. Fifty-nine percent of mothers of affected children and 37 percent of controls were prima gravidas. Forceps delivery, birth weight of 3500 gm or more, and primiparity were all significant risk factors for

acquired facial palsy. The incidence of additional birth injuries also was substantially higher among affected subjects than among the general population of newborns. Sixty-six of 81 patients had adequate follow-up. Recovery has been complete for 59 patients (89 percent) and incomplete for the remaining 7 (mean follow-up 34 months). In summary, congenital traumatic facial palsy has definable risk factors and a predictably favorable outcome.

Database: Medline

32. The effects of forceps delivery on facial growth.

Author(s): Germane, N; Rubenstein, L

Source: Pediatric dentistry; Sep 1989; vol. 11 (no. 3); p. 193-197

Publication Date: Sep 1989

Publication Type(s): Journal Article

PubMedID: 2638004

Abstract:Postnatal growth of the face is a composite function of genetic and environmental factors. A sudden traumatic insult due to the use of forceps at birth could have long-term effects which could detrimentally influence growth and development. This study examines the development of the skeletal and dental components of forceps vs. non-forceps-delivered patients. The association between delivery methods as related to TMJ problems, bruxism, posterior crossbites, and molar arch width differences was evaluated in 16 forceps-delivered and 29 naturally delivered patients. Results showed no statistically significant difference between delivery method and TMJ problems, posterior crossbites, bruxism, or molar arch width. It was noted that the non-forceps group had a higher incidence of posterior crossbite and narrower molar arch width. The forceps-delivered group had a higher percentage of bruxism and TMJ pain and/or noise. It was also noted that the small sample size may have influenced the statistical relationships.

Database: Medline

33. Management of facial palsy caused by birth trauma.

Author(s): Bergman, I; May, M; Wessel, H B; Stool, S E

Source: The Laryngoscope; Apr 1986; vol. 96 (no. 4); p. 381-384

Publication Date: Apr 1986

Publication Type(s): Case Reports Journal Article

PubMedID: 3959696

Abstract:We present a newborn with a unilateral complete facial palsy caused by birth trauma, and discuss the differential diagnosis, pathophysiology, and management of this common, usually benign, condition. This child made a rapid, complete, spontaneous recovery despite a severe initial injury. Surgical exploration of the facial nerve should be considered only for infants with complete paralysis, clinically and electrophysiologically, who demonstrate no improvement by 5 weeks of age.

Database: Medline

34. Comparison of maternal and fetal effects of vacuum extraction with forceps or cesarean deliveries

Author(s): Greis J.B.; Bieniarz J.; Scommegna A.

Source: Obstetrics and Gynecology; 1981; vol. 57 (no. 5); p. 571-577

Publication Date: 1981

Publication Type(s): Article

PubMedID: 7219906

Abstract:Results of 90 vacuum extraction (VE) deliveries were compared with effects on the mother and fetus of forceps delivery or cesarean section. Forceps delivery increased the incidence of birth canal trauma threefold and the incidence of anemia sevenfold (18% for VE versus 48% for forceps delivery, and 4 versus 30%, respectively) ($P \leq .001$). When cesarean section was the alternative operation, the incidence of blood loss was significantly increased (72%, versus 18% with VE), as was febrile morbidity (48%, versus 6% with VE) ($P \leq .001$). Hospitalization time and costs in the present and future for cesarean section deliveries are markedly higher than for VE. Maternal requirements for anesthesia are markedly reduced with VE because of the gentleness of the operation. A failed trial of VE in 7 patients did not constitute any greater hazard to the mother than initial management by cesarean section. However, babies born by cesarean section after failed VE had a slightly lower Apgar score at 1 minute ($P \leq .05$) but not at 5 minutes, as compared with babies born by cesarean section attempted initially. Otherwise, Apgar scores of infants born by VE did not differ from those if infants delivered by forceps or cesarean section. Infants delivered by VE had a higher incidence of transient cosmetic deformations, including 'chignon' and cephalhematoma, whereas infants delivered by forceps had forceps marks and facial lacerations more frequently. Neither perinatal mortality nor serious traumatic complications were attributable to VE, due to its judicious use for a limited time of approximately 15 minutes.

Database: EMBASE

35. Ocular hazards during birth.

Author(s): Jain, I S; Singh, Y P; Grupta, S L; Gupta, A

Source: Journal of pediatric ophthalmology and strabismus; 1980; vol. 17 (no. 1); p. 14-16

Publication Date: 1980

Publication Type(s): Case Reports Journal Article

PubMedID: 7365642

Available in full text at [Journal of Pediatric Ophthalmology and Strabismus](#) - from ProQuest

Abstract:In a study of over 2,000 consecutive live births, 243 newborns (12%) suffered birth trauma to the eye and its adnexa. Two hundred twenty-one cases (11%) had multiple retinal hemorrhages. Severe ocular accidents by forceps delivery were seen in the form of hyphema, Purtscher's retinopathy, corneal edema, facial palsy, and corneal abscess. Purtscher's retinopathy and corneal abscess are rare birth injuries that have not been reported so far in newborn babies.

Database: Medline

36. Case of Bilateral Facial Paralysis, due to Injury by Forceps at Birth.

Author(s): Edgeworth, F H

Source: British medical journal; Jan 1894; vol. 1 (no. 1723); p. 11

Publication Date: Jan 1894

Publication Type(s): Journal Article

PubMedID: 20754593

Available in full text at [British Medical Journal](#) - from National Library of Medicine

Database: Medline

Strategy 251327

#	Database	Search term	Results
1	Medline	exp "FACIAL INJURIES"/	40974
2	Medline	((facial OR face) ADJ2 injur*).ti,ab	3935
3	Medline	((facial OR face) ADJ2 bruis*).ti,ab	62
4	Medline	((facial OR face) ADJ2 contusion*).ti,ab	24
5	Medline	(1 OR 2 OR 3 OR 4)	43258
6	Medline	(forcep*).ti,ab	9882
7	Medline	exp "OBSTETRICAL FORCEPS"/	1575
8	Medline	(6 OR 7)	10450
9	Medline	(5 AND 8)	181
10	Medline	(face OR facial).ti,ab	240347
11	Medline	(8 AND 10)	182
12	EMBASE	((face OR facial) ADJ3 (injur* OR laceration* OR bruis* OR contusion*).ti,ab	4927
13	EMBASE	exp "FACE INJURY"/ OR exp "EYE INJURY"/ OR exp "FACE FRACTURE"/ OR exp "MOUTH INJURY"/ OR exp "NOSE INJURY"/	57148
14	EMBASE	(12 OR 13)	59905
15	EMBASE	exp "FORCEPS EXTRACTION"/ OR exp "FORCEPS DELIVERY"/ OR	3658

		exp "FORCEPS,OBSTETRIC"/	
16	EMBASE	(14 AND 15)	54
17	EMBASE	(mouth OR oral).ti,ab	733817
18	EMBASE	(15 AND 17)	28
19	EMBASE	exp "MOUTH INJURY"/	528
20	EMBASE	(15 AND 19)	0
21	EMBASE	(face OR facial).ti,ab	299352
22	EMBASE	(15 AND 21)	82
23	Medline	(mouth OR oral).ti,ab	552790
24	Medline	(7 AND 23)	5
25	Medline	exp "FACIAL NERVE INJURIES"/	1763
26	Medline	(7 AND 25)	0
27	Medline	exp "MAXILLOFACIAL INJURIES"/	15478
28	Medline	(7 AND 27)	2
29	CINAHL	exp "FACIAL INJURIES"/ OR exp "EYE INJURIES"/ OR exp "MAXILLOFACIAL INJURIES"/	3138
30	CINAHL	((face OR facial) ADJ3 (injur* OR laceration* OR bruise* OR contusion*)).ti,ab	757
31	CINAHL	(29 OR 30)	3626
32	CINAHL	exp "OBSTETRICAL FORCEPS"/	355
33	CINAHL	(31 AND 32)	7