



West Middlesex University Hospital

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Date: 18 Jul 2017

Sources searched: Medline, Embase, CINAHL, DynaMed Plus, TRIP Database.

Induction of Labour at 40 weeks in ART Pregnancies

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Summary:

Pregnancies resulting from the use of artificial reproductive technologies (ART) are associated with an increased risk of adverse obstetric and perinatal outcomes constituting a high-risk approach to management. The increased adverse outcomes encountered by this group have largely been attributed to the underlining subfertility and maternal factors (older age, obesity, uterine anomalies, multiple gestation) rather than the infertility treatment itself.

There is a lack of conclusive evidence to guide the use of induction of labour at term or expectant management for ART pregnancies, however in the light of increased risks and lack of evidence it seems reasonable to consider induction on an individual patient basis.

1. Perinatal risks after IVF and ICSI.

Author(s): Zollner, Ursula; Dietl, Johannes

Source: Journal of perinatal medicine; Jan 2013; vol. 41 (no. 1); p. 17-22

Publication Date: Jan 2013

Publication Type(s): Journal Article Review

PubMedID: 23095186

Abstract: Pregnancies that occur after infertility treatment, particularly after assisted reproduction, constitute high-risk pregnancies. Occurrences of conditions such as high blood pressure, preeclampsia, growth retardations and bleeding are higher in comparison with the norm of spontaneously entered pregnancies. The rate of premature births and the frequency of intrauterine deaths are much higher than the average for all pregnancies. Furthermore, pregnancies resulting from in - vitro fertilisation (IVF) have significantly higher rates of requiring induced labour or caesarean section. However, it is to be assumed that these complications and unfortunate developments are not caused by extracorporeal fertilisation itself, but rather are due to the frequency of multiples and to the risk factors of the women involved. These women are, on average, older and there are often more problems with cycle irregularities, uterine anomalies and obesity than in the total collective of all pregnancies. The methods of modern reproductive medicine often bring a higher rate of multiple pregnancies. The clinical problem of multiple pregnancies is, above all, the raised rate of premature births and intrauterine growth retardations that contribute to the significantly higher rate of morbidity and mortality for these children. The slightly higher rate of congenital defects after IVF and intracytoplasmic sperm injection (ICSI) are also attributed more to the risk profile of the parents and less to the techniques themselves. The most important and easy-to-avoid complication is the multiple pregnancy, and it should be our goal to lower this rate even further.

Database: Medline

2. Obstetric and perinatal outcomes in singleton pregnancies resulting from ivf/icsi: A systematic review and meta-analysis

Author(s): Pandey S.; Hamilton M.; Shetty A.; Bhattacharya S.; Maheshwari A.

Source: Human Reproduction Update; Sep 2012; vol. 18 (no. 5); p. 485-503

Publication Date: Sep 2012

Publication Type(s): Review

PubMedID: 22611174

Available in full text at [Human Reproduction Update](#) - from Oxford University Press ; Collection notes: To access please select Login with Athens and search and select NHS England as your institution before entering your NHS OpenAthens account details.

Abstract:Background: Earlier reviews have suggested that IVF/ICSI pregnancies are associated with higher risks. However, there have been recent advances in the way IVF/ICSI is done, leading to some controversy as to whether IVF/ICSI singletons are associated with higher perinatal risks. The objective of this systematic review was to provide an up-to-date comparison of obstetric and perinatal outcomes of the singletons born after IVF/ICSI and compare them with those of spontaneous conceptions. Methods: Extensive searches were done by two authors. The protocol was agreed a priori. PRISMA guidance was followed. The data were extracted in 2 x 2 tables. Risk ratio and risk difference were calculated on pooled data using Rev Man 5.1. Quality assessment of studies was performed using Critical Appraisal Skills programme. Sensitivity analysis was performed when the heterogeneity was high ($I^2 > 50\%$). Results: There were 20 matched cohort studies and 10 unmatched cohort studies included in this review. IVF/ICSI singleton pregnancies were associated with a higher risk (95% confidence interval) of ante-partum haemorrhage (2.49, 2.30-2.69), congenital anomalies (1.67, 1.33-2.09), hypertensive disorders of pregnancy (1.49, 1.39-1.59), preterm rupture of membranes (1.16, 1.07-1.26), Caesarean section (1.56, 1.51-1.60), low birthweight (1.65, 1.56-1.75), perinatal mortality (1.87, 1.48-2.37), preterm delivery (1.54, 1.47-1.62), gestational diabetes (1.48, 1.33-1.66), induction of labour (1.18, 1.10-1.28) and small for gestational age (1.39, 1.27-1.53). Conclusions: Singletons pregnancies after IVF/ICSI are associated with higher risks of obstetric and perinatal complications when compared with spontaneous conception. Further research is needed to determine which aspect of assisted reproduction technology poses most risk and how this risk can be minimized. © The Author 2012. Published by Oxford University Press on behalf of the European Society of Human Reproduction and Embryology. All rights reserved.

Database: EMBASE

3. Risk of stillbirth and infant deaths after assisted reproductive technology: a Nordic study from the CoNARTaS group.

Author(s): Henningsen, A A; Wennerholm, U B; Gissler, M; Romundstad, L B; Nygren, K G; Tiitinen, A; Skjaerven, R; Nyboe Andersen, A; Lidegaard, Ø; Forman, J L; Pinborg, A

Source: Human reproduction (Oxford, England); May 2014; vol. 29 (no. 5); p. 1090-1096

Publication Date: May 2014

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

PubMedID: 24578477

Available in full text at [Human Reproduction](#) - from Highwire Press

Abstract:STUDY QUESTIONIs the risk of stillbirth and perinatal deaths increased after assisted reproductive technology (ART) compared with pregnancies established by spontaneous conception (SC)?SUMMARY ANSWERA significantly increased risk of stillbirth in ART singletons was only observed before 28 + 0 gestational weeks.WHAT IS KNOWN ALREADY The current literature indicates that children born after ART have an increased risk of perinatal death. The knowledge on stillbirth in ART pregnancies is limited.STUDY DESIGN, SIZE, DURATIONA population based case-control study.PARTICIPANTS/MATERIALS, SETTING AND METHODSA total of 62 485 singletons and 29 793 twins born after ART in Denmark, Finland, Norway and Sweden, from 1982 to 2007, were compared with 362 798 spontaneously conceived (SC) singletons and 132 181 twins.MAIN RESULTS AND THE ROLE OF CHANCE The adjusted rate ratio for stillbirth at gestational weeks 22 + 0 to 27 + 6 was 2.08 [95% confidence interval (CI) 1.55-2.78] for ART versus SC singletons. After 28 + 0 gestational weeks there was no significant difference in the risk of stillbirth between ART and SC singletons. ART twins had a lower risk of stillbirth compared with SC twins, but when restricting the analysis to opposite-sex twins and excluding all monozygotic twins, there was no significant difference between the groups. Singletons conceived by ART had an overall increased risk of early neonatal death (adjusted odds ratio 1.54, 95% CI 1.28-1.85) and death within the first year after birth (1.45, 1.26-1.68). No difference regarding these two parameters was found when further adjusting for the gestational age [(0.97, 0.80-1.18) and (0.99, 0.85-1.16), respectively]. ART twins had a lower risk of early neonatal and infant deaths than SC twins, but no difference was found when restricting the analyses to opposite-sex twins.LIMITATIONS, REASON FOR CAUTION We were not able to adjust for potential confounders, such as a prior history of stillbirth, induction of labour, body mass index or smoking.WIDER IMPLICATIONS OF THE FINDINGS The risk of stillbirth in ART versus SC singletons was only increased for very early gestational ages (before 28 weeks). This might indicate that the current clinical management of ART pregnancies is sufficient regarding prevention of stillbirth during the third trimester.STUDY FUNDING/COMPETING INTEREST(S)No conflict of interest was reported. The European Society for Human Reproduction and Embryology (ESHRE), the University of Copenhagen, Denmark, the Danish Agency for Science, Technology and Innovation and Sahlgrenska University Hospital, Gothenburg, Sweden supported the project. The CoNARTaS group has received travel and meeting funding from the Nordic Society of Obstetrics and Gynecology (NFOG).

Database: Medline

4. Pregnant after assisted reproduction: A risk pregnancy is born! 18-years results from a population-based registry in Flanders, Belgium

Author(s): Ombelet W.; Martens G.; Bruckers L.

Source: Human Reproduction; Jun 2015; vol. 30

Publication Date: Jun 2015

Publication Type(s): Conference Abstract

Available in full text at [Human Reproduction](#) - from Oxford University Press ; Collection notes: To access please select Login with Athens and search and select NHS England as your institution before entering your NHS OpenAthens account details.

Available in full text at [Human Reproduction](#) - from Highwire Press

Abstract: Study question: In this population-based cohort study we examined the perinatal outcome of pregnancies after assisted reproduction (ART) including IVF/ ICSI and ovarian stimulation (OS) with or without intrauterine insemination. The outcome results were compared with the results of a reference population of natural conception (NC) pregnancies. Summary answer: The increased risk for perinatal morbidity and mortality of babies born after ART is largely attributed to a higher rate of multiple gestations but ART singletons are also at increased risk for perinatal problems when compared to NC pregnancies. Therefore all ART-pregnancies should be considered as risk pregnancies. What is known already: Although the increased risk for perinatal morbidity and mortality of babies born after ART is largely attributed to a higher rate of multiple gestations, a significantly worse perinatal outcome for singleton pregnancies following ART compared to pregnancies after natural conception has been reported. Most studies only include IVF/ICSI pregnancies, studies describing the perinatal outcome of pregnancies after non-IVF assisted reproduction and comparative studies including IVF/ICSI, OS and NC pregnancies are scarce. Study design, size, duration: By using the data of a population-based registry we studied the perinatal outcome of 1 079 814 births during a 18 years period (1993-2010). We examined and compared the perinatal outcome results of a large cohort of ART, OS and NC pregnancies. Participants/materials, setting, methods: The Flanders Study Centre for Perinatal Epidemiology collects data on the perinatal outcome of all deliveries of >21 weeks and/or 500 g at birth. The following perinatal outcome parameters were studied: prematurity, low birth weight, perinatal mortality and morbidity including neonatal intracranial bleeding and need for intubation. Main results and the role of chance: This study describes the perinatal results of a very large cohort of IVF/ICSI and OS births. Our data show that IVF/ICSI singletons had a significantly worse outcome when compared to OS and NC for almost all investigated perinatal parameters. Non-IVF OS singletons were also significantly disadvantaged for birthweight and prematurity when compared to NC singletons. The outcome of twin pregnancies was similar for the three groups unless only unlike-sex twins were studied separately. Among this subgroup, IVF/ICSI carried a higher risk for low birth weight when compared to NC. OS unlike-sex twins were at increased risk for low birth weight and perinatal mortality when compared to NC unlike-sex twins. Limitations, reason for caution: Although our logistic regression analysis included co-variables with a potential impact on perinatal outcome such as mode of conception, female age, fetal sex, parity and year of delivery, we couldn't correct for other prominent confounders such as smoking, obesity, insulin resistance, socio-economic status, occupation exposures, pre-existing disease, etc. Wider implications of the findings: Our results show that all ART-pregnancies have to be considered as risk pregnancies, irrespective of the number of fetuses. ART-singletons are also at increased risk when compared to NC babies. Although IVF/ICSI singletons have the worse prognosis, OS singletons also carry a higher perinatal risk. For unlike-sex twins, results showed that both IVF/ ICSI and OS pregnancies carry a higher perinatal risk when compared to NC unlike-sex twins.

Database: EMBASE

5. Spontaneous delivery in women after ART

Author(s): Slabinskaya T.V.; Sudarikova E.G.

Source: Reproductive BioMedicine Online; Oct 2010; vol. 20

Publication Date: Oct 2010

Publication Type(s): Conference Abstract

Abstract: Introduction: Pregnancies achieved by ART are at higher risk for obstetrical and perinatal complications than spontaneous pregnancies, and close surveillance during pregnancy should be considered. Increased risks may be attributable to the underlying infertility and characteristics of the infertile couple or use of assisted reproductive techniques [1,2]. Women undergoing ART should be informed about the increased rate of obstetrical interventions such as induced labour and elective Caesarean delivery. The traditional method of delivery after IVF and especially after IVF+ ICSI program is elective Caesarean section [3]. Objective: To review the specialties of delivery after assisted reproductive technology - IVF. Materials and Methods: A total of 2579 women delivered at the Obstetrics Department of Research Institute of Maternal and Child Care in 2009 were included in this study. All patients were stratified in two groups: I group - women undergoing IVF cycles (98) and II group women became pregnant after spontaneous conception (2481). The specialties of delivery of ART pregnancies in subfertile women are compared with those of spontaneously conceived pregnancies. The rate of vaginal delivery was compared with means in 2008 and 6 months of 2010 years. Results: During 2008-2009 years we had increasing rate of spontaneous delivery after ART - from 16.3% to 20.4% and this tendency is remaining in 2010 year - 21.6%. In spite of high risk of complication of pregnancy and delivery women undergoing ART were really ready for spontaneous labour, and their desire were took into consideration. Vaginal delivery in 2009 year was registered in 20.4% (20 cases), including 17 singleton pregnancies and 3 twins. Among 20 patients 3 women, who have become pregnant by IVF+ ICSI technology, had spontaneous delivery. The middle age of women in I group consist 32.0+/-3.0 years old. The duration of infertility was 5.7+/-3.2 years. Ongoing pregnancies are endangered by the high rate of multiple births following ART - in 2009 year the rate of multiple births after ART was - 34.7%. The main reason for planned cesarean included multiple pregnancy-three fetus (12.1%), not head-down position (21.2%), preeclampsia (21.2%), uterine scar (7.6%), placenta previa (3%). As additional reasons were maternal age more than 35 years and repeatedly tries of ART in the past, underlying infertility and somatic pathology (37.8%). We also took into account the preference of women. Main medical reasons for emergency cesarean were comparable with those of women after spontaneous conception - abruptio placentae 6.4+/-2.8% and 3.2+/-0.5%, fetal distress 3.9+/-2.2% and 7.0+/-0.8%, failure of labor to progress 7.4+/-2.9% and 3.9+/-0.6%, respectively. Conclusion: According to this study we found the increase of vaginal delivery after ART in 2009 year compared with 2008, when abdominal delivery consisted 83.7%. Delivery after ART is needed to ensure the mother's and infant's well-being, but not only by cesarean section. Main medical reasons for emergency cesarean in women undergoing ART were comparable with those of women after spontaneous conception.

Database: EMBASE

6. The association of between Assisted Reproduction Technology and malpresentation/induction of labor: a meta-analysis.

Author(s): Jenabi E; Khazaei S

Source: The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians; Jul 2017 ; p. 1-9

Publication Date: Jul 2017

Publication Type(s): Journal Article

PubMedID: 28707560

Abstract:BACKGROUND: Some epidemiological studies have investigated that assisted reproduction technology (ART) can increase the risk of malpresentation and induction of labor. To date, no meta-analysis has been performed for assessing the relationship between ART and malpresentation/induction of labor. This meta-analysis was conducted to assess the association between ART and malpresentation/induction of labor.METHODS: A systematic search was carried out in major databases PubMed, Web of Science, and Scopus to May 2017. The heterogeneity across studies was explored by Q-test and I(2) statistic. The publication bias was assessed by the Begg's and Egger's tests. The results were showed using odds ratio (OR) estimate with its 95% confidence intervals (CI) using a random-effects model.RESULTS: The systematic search included 2103 articles until May 2017 with 1 401 448 participants. Based on OR estimates obtained from case-control and cohort studies, there was significant association between ART and risk of the induction of labor/malpresentation (1.33; 95% CI: 1.23, 1.43) and (1.58; 95% CI: 1.17, 1.98), respectively.CONCLUSIONS: We showed based on reports in epidemiological studies that ART is a risk factor for malpresentation and induction of labor.

Database: PubMed

7. Induction of labour vs. spontaneous vaginal delivery in twin pregnancy after 36 weeks of gestation

Author(s): Tavares M.V.; Domingues A.P.; Nunes F.; Tavares M.; Fonseca E.; Moura P.

Source: Journal of Obstetrics and Gynaecology; Jan 2017; vol. 37 (no. 1); p. 29-32

Publication Date: Jan 2017

Publication Type(s): Article

Abstract:Time for delivery and delivery pathway in twin pregnancies are still in great debate. Our study goal was to compare the characteristics of delivery and maternal-foetal outcome in uncomplicated near-term twin pregnancies undergoing labour induction and those with spontaneous labour. We found no statistical differences in patients with twin pregnancies who underwent labour induction and those with spontaneous labour regarding the history of previous caesarean delivery, parity, pregnancy achieved by assisted reproductive techniques (ART), chorionicity and cervical dilation at the admission as well as maternal and neonatal morbidity, and admission to the neonatal intensive care unit. There were significant differences in the caesarean section rate (60.6 vs. 33.3%, $p < .05$) and the time interval between delivery of the first and second foetus (9.8 vs. 11.7 min, $p = .024$). There was an increased incidence of caesarean section after the induction of labour. However, it appears to be a safe option.Copyright © 2016 Informa UK Limited, trading as Taylor & Francis Group.

Database: EMBASE

8. Assisted reproductive technology and the risk of pregnancy-related complications and adverse pregnancy outcomes in singleton pregnancies: A meta-analysis of cohort studies

Author(s): Qin J.; Sheng X.; Wang H.; Liu X.; Gao S.

Source: Fertility and Sterility; 2016; vol. 105 (no. 1); p. 73

Publication Date: 2016

Publication Type(s): Article

PubMedID: 26453266

Abstract:Objective To determine whether there are any increases in pregnancy-related complications and adverse pregnancy outcomes in singleton pregnancies after assisted reproductive technology (ART) compared with those conceived naturally. Design Meta-analysis. Setting University-affiliated teaching hospital. Patient(s) Singleton pregnancies conceived with ART and naturally. Intervention(s) PubMed, Google Scholar, Cochrane Libraries and Chinese database were searched through March 2015 to identify studies that met pre-stated inclusion criteria. Either a fixed- or a random-effects model was used to calculate the overall combined risk estimates. Subgroup analysis was performed to explore potential heterogeneity moderators. Main Outcome Measure(s) Pregnancy-related complications and adverse pregnancy outcomes. Result(s) Fifty cohort studies comprising 161,370 ART and 2,280,241 spontaneously conceived singleton pregnancies were identified. The ART singleton pregnancies had a significantly increased risk of pregnancy-induced hypertension (relative risk [RR] 1.30, 95% confidence interval [CI] 1.04-1.62; I² = 79%), gestational diabetes mellitus (RR 1.31, 95% CI 1.13-1.53; I² = 6%), placenta previa (RR 3.71, 95% CI 2.67-5.16; I² = 72%), placental abruption (RR 1.83, 95% CI 1.49-2.24; I² = 22%), antepartum hemorrhage (RR 2.11, 95% CI 1.86-2.38; I² = 47%), postpartum hemorrhage (RR 1.29, 95% CI 1.06-1.57; I² = 65%), polyhydramnios (RR 1.74, 95% CI 1.24-2.45; I² = 0%), oligohydramnios (RR 2.14, 95% CI 1.53-3.01; I² = 0%), cesarean sections (RR 1.58, 95% CI 1.48-1.70; I² = 92%), preterm birth (RR 1.71, 95% CI 1.59-1.83; I²=80%), very preterm birth (RR 2.12, 95% CI 1.73-2.59; I² = 90%), low birth weight (RR 1.61, 95% CI 1.49-1.75; I² = 80%), very low birth weight (RR 2.12, 95% CI 1.84-2.43; I² = 67%), small for gestational age (RR 1.35, 95% CI 1.20-1.52; I² = 82%), perinatal mortality (RR 1.64, 95% CI 1.41-1.90; I²=45%), and congenital malformation (RR 1.37, 95% CI 1.29-1.45; I²=41%). Relevant heterogeneity moderators have been identified by subgroup analysis. Sensitivity analysis yielded consistent results. No evidence of publication bias was observed. Conclusion(s) The ART singleton pregnancies are associated with higher risks of adverse obstetric outcomes. Obstetricians should manage these pregnancies as high risk. Copyright © 2016 American Society for Reproductive Medicine.

Database: EMBASE

9. Risk of adverse pregnancy and perinatal outcomes after high technology infertility treatment: A comprehensive systematic review

Author(s): Palomba S.; Santagni S.; La Sala G.B.; Homburg R.; Orvieto R.

Source: Reproductive Biology and Endocrinology; Nov 2016; vol. 14 (no. 1)

Publication Date: Nov 2016

Publication Type(s): Review

PubMedID: 27814762

Available in full text at [Reproductive Biology and Endocrinology](#) - from ProQuest Content

Available in full text at [Reproductive Biology and Endocrinology](#) - from BioMed Central

Abstract:In the literature, there is growing evidence that subfertile patients who conceived after infertility treatments have an increased risk of pregnancy and perinatal complications and this is particularly true for patients who conceived through use of high technology infertility treatments. Moreover, high technology infertility treatments include many concomitant clinical and biological risk factors. This review aims to summarize in a systematic fashion the current evidence regarding the relative effect of the different procedures for high technology infertility treatments on the risk of adverse pregnancy and perinatal outcome. A literature search up to August 2016 was performed in IBSS, SocINDEX, Institute for Scientific Information, PubMed, Web of Science and Google Scholar and an evidence-based hierarchy was used to determine which articles to include and analyze. Data on prepregnancy maternal factors, low technology interventions, specific procedures for male factor, ovarian tissue/ovary and uterus transplantation, and chromosomal abnormalities and malformations of the offspring were excluded. The available evidences were analyzed assessing the level and the quality of evidence according to the Oxford Centre for Evidence-Based Medicine guidelines and the Grading of Recommendations Assessment, Development, and Evaluation system, respectively. Current review highlights that every single procedure of high technology infertility treatments can play a crucial role in increasing the risk of pregnancy and perinatal complications. Due to the suboptimal level and quality of the current evidence, further well-designed studies are needed. Copyright © 2016 The Author(s).

Database: EMBASE

10. Obstetric consequences of subfertility: a retrospective cohort study

Author(s): DoPierala A.L.; Bhatta S.; Bhattacharya S.; Raja E.A.

Source: BJOG: An International Journal of Obstetrics and Gynaecology; 2016; vol. 123 (no. 8); p. 1320-1328

Publication Date: 2016

Publication Type(s): Article

PubMedID: 26335260

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

Abstract:Objective: To compare the risk of adverse pregnancy outcomes in women with and without subfertility and to investigate whether fertility treatment contributes to the adverse outcomes. Design: Register-based retrospective cohort study. Setting: Aberdeen, Scotland. Population: The exposed group included women with subfertility attending Aberdeen Fertility Clinic between 1989 and 2008 and delivering a singleton (n = 3188) or twin (n = 350) at Aberdeen Maternity Hospital between 1992 and 2009. The unexposed cohort included the remainder of women (singleton n = 52443, twin n = 1125) delivering at Aberdeen Maternity Hospital between 1992 and 2009. Methods: The Aberdeen Fertility Centre database and Aberdeen Maternity and Neonatal Databank were linked using Community Health Index numbers. Regression models were used to calculate risk ratios and 95% confidence intervals adjusting for potential confounders. Main outcome measures: Maternal outcomes including pre-eclampsia, antepartum haemorrhage, preterm birth, induction of labour; delivery outcomes including operative vaginal delivery, caesarean section; and offspring outcomes including low birthweight, stillbirth and neonatal death. Results: Women with a history of subfertility who delivered a singleton were at a higher risk of pre-eclampsia [adjusted risk ratios (aRR) 1.18, 95% confidence intervals (CI) 1.02-1.37], antepartum haemorrhage (aRR 1.32, 95% CI 1.18-1.47), induction of labour (aRR 1.21, 95% CI 1.11-1.31) and very preterm delivery (<32 weeks) (aRR 1.96, 95% CI 1.53-2.49). Subfertile women delivering twins were at a higher risk of being delivered by emergency caesarean section (aRR 2.14, 95% CI 1.26-3.66). There were no significant differences in adverse outcomes for singleton pregnancies between the treated and untreated subfertile couples. Conclusion: Subfertility per se, rather than fertility treatment, was associated with increased risk of adverse outcomes in singleton pregnancies. Tweetable abstract: Large cohort study found higher incidence of adverse outcome in subfertile women having singletons or twins. Copyright © 2015 Royal College of Obstetricians and Gynaecologists

Database: EMBASE

11. The obstetric outcome of IVF Singletons

Author(s): Szymusik I.; Kosinska-Kaczynska K.; Marianowski P.; Wielgos M.

Source: Journal of Maternal-Fetal and Neonatal Medicine; 2016; vol. 29 ; p. 280

Publication Date: 2016

Publication Type(s): Conference Abstract

Abstract: Introduction: IVF singletons alone have worse perinatal outcome when compared to spontaneously conceived singletons, especially in terms of preterm birth and its complications. Underlying cause of subfertility seems to be a risk factor of worse perinatal outcome. Materials and methods: Observational retrospective case control study included 644 women in singleton pregnancies who delivered after completed 22 weeks of gestation at the 1st Department of Obstetrics and Gynecology, Medical University of Warsaw, Poland, between 2004 and 2014. The study group comprised of 336 patients who conceived by means of in vitro fertilization (IVF or ICSI). The control group consisted of 308 women who conceived spontaneously and delivered within the same time period. Collected data included maternal characteristics (age, parity, pre-pregnancy BMI, gestational weight gain), incidence of pregnancy complications, time and mode of delivery with indications for cesarean section, neonatal outcome at delivery and the cause of infertility in the study group. Clinical cases and summary results: The two study groups were initially matched by age and parity and were also similar with regard to BMI, gestational weight gain and the history of hypothyroidism. The overall rate of pregnancy complications in IVF singletons was 46.4% in comparison to 40.2% ($p=0.13$). IVF treatment increased the odds of having vaginal bleeding in the first trimester (OR 1.68, 95% CI 1.0- 2.86), placenta previa (OR 5.15, 95% CI 1.1-33.9), preterm delivery (OR 2.06, 95% CI 1.16-3.68), newborn's low birth weight (OR 2.27, 95% CI 1.19-4.36) and elective cesarean section (OR 2.39, 95% CI 1.7-3.4). The analysis of the causes of infertility and their influence on gestational complications did not show any significant relations. Conclusion: The results of the presented study are in accordance with latest reports on increased pregnancy complications in IVF singletons. The course of pregnancy after IVF does not differ in many factors from the pregnancy after natural conception. Preterm birth remains the major concern in IVF pregnancies, making them higher risk. Infertility treatment is more often associated with an elective CS, which sometimes seems to result from psychological aspects and anxiety only.

Database: EMBASE

9. Adverse obstetrical and neonatal outcomes in pregnancies resulting from oocyte donation

Author(s): Elenis E.; Skoog-Svanberg A.; Sydsjo G.

Source: Human Reproduction; Jun 2015; vol. 30

Publication Date: Jun 2015

Publication Type(s): Conference Abstract

Available in full text at [Human Reproduction](#) - from Oxford University Press ; Collection notes: To access please select Login with Athens and search and select NHS England as your institution before entering your NHS OpenAthens account details.

Available in full text at [Human Reproduction](#) - from Highwire Press

Abstract: Study question: To explore obstetrical and neonatal outcomes among relatively young women with optimal health status conceiving singletons with donated versus autologous oocytes (via IVF and spontaneously). Summary answer: Oocyte donation is associated with hypertensive disorders of pregnancy, oligohydramnios, preterm delivery, labor induction, delivery by caesarean section, retained placenta, post-partum hemorrhage and longer hospital stay after delivery. However, neonates have similar probability for major congenital malformations and did not differ regarding birth weight and length among term infants. What is known already: Oocyte donation as an infertility treatment among women with idiopathic, iatrogenic or natural menopause has been associated to gestational diabetes, hypertensive disorders, placental abnormalities, preterm delivery and increased rate of caesarean delivery while simultaneously being characterized by high rates of primiparity, advanced maternal age and multiple gestation constituting the individual risk of mode of conception difficult to assess. Study design, size, duration: Retrospective cohort case study involving 289 pregnant women with singleton deliveries; 76 women conceiving with donated oocytes, 150 nulliparous women without infertility conceiving spontaneously and 63 women conceiving after non-donor IVF. Participants/materials, setting, methods: Data on obstetrical and neonatal outcomes were retrieved from the National Birth Medical Register and the medical records of oocyte recipients from the treating University Hospitals of Sweden. Demographic and logistic regression analysis were performed to examine the association of mode of conception and perinatal outcomes. Main results and the role of chance: OD pregnant women had a higher probability of hypertensive disorders [aOR 2.84, 95% CI (1.04-7.81)], oligohydramnios [aOR 12.74, 95% CI (1.24-130.49)], postpartum hemorrhage [aOR 7.11, 95% CI (2.02-24.97)], retained placenta [aOR 6.71, 95% CI (1.58-28.40)], caesarean delivery [aOR 2.95, 95% CI (1.52-5.71)] and induction of labor [aOR 3.00, 95% CI (1.39-6.44)], when compared to women who conceived spontaneously. Similar trends, though not statistically significant, were noted among OD and non-donor IVF pregnant women. Higher intervention during delivery was observed in women with diminished ovarian reserve but the risk for hypertensive disorders did not differ after adjustment. Despite higher likelihood of prematurity, similar mean birth weight and length among term infants were noted and the presence of congenital malformations did not differ between groups. Limitations, reason for caution: One of the limitations of our study is the lack of power. Furthermore we did not take into account parameters such as donor age, paternal age, ART method (conventional IVF or ICSI) as well as if the pregnancy resulted from a cryopreserved or fresh embryo. Wider implications of the findings: The selection process of recipients for medically indicated oocyte donation treatment in Sweden seems to be effective in excluding women with severe comorbidities and beneficial regarding the health status of the infant. Oocyte recipients-despite being relatively young and of optimal health status-need careful counseling preconceptionally and closer monitoring prenatally for the development of hypertensive disorders. Nevertheless neonatal outcomes seem to be favorable.

Database: EMBASE

10. Pregnancy-related complications and adverse pregnancy outcomes in multiple pregnancies resulting from assisted reproductive technology: A meta-analysis of cohort studies

Author(s): Qin J.; Wang H.; Sheng X.; Liang D.; Xia J.; Tan H.

Source: Fertility and Sterility; Jun 2015; vol. 103 (no. 6); p. 1492

Publication Date: Jun 2015

Publication Type(s): Article

PubMedID: 25910567

Abstract:Objective To provide an up-to-date comparison of pregnancy-related complications and adverse pregnancy outcomes of multiple pregnancies generated with assisted reproductive technology (ART) vs. spontaneous conception. Design Meta-analysis. Setting University-affiliated teaching hospital. Patient(s) Multiple pregnancies conceived by ART or naturally. Intervention(s) Searches through October 2014 were conducted on PubMed, Google Scholar, Cochrane Libraries, China Biology Medicine disc, Chinese Scientific Journals Fulltext Database, China National Knowledge Infrastructure, and Wanfang Data, to identify studies that met prestated inclusion criteria. Either a fixed- or a random-effects model was used to calculate the overall combined risk estimates. Subgroup analysis was performed to explore potential heterogeneity moderators. Main Outcome Measure(s) Pregnancy-related complications and adverse pregnancy outcomes. Result(s) Thirty-nine cohort studies involving 146,008 multiple births were included in the meta-analysis. Multiple pregnancies from ART were associated with a higher risk of premature rupture of membranes (relative risk [RR] = 1.20, 95% confidence interval [CI]: 1.05-1.37; I2 = 15%); pregnancy-induced hypertension (RR = 1.11, 95% CI: 1.04-1.19; I2 = 6%); gestational diabetes mellitus (RR = 1.78, 95% CI: 1.25-2.55; I2 = 42%); preterm birth (RR = 1.08, 95% CI: 1.03-1.14; I2 = 83%); very preterm birth (RR = 1.18, 95% CI: 1.04-1.34; I2 = 79%); low birth weight (RR = 1.04, 95% CI: 1.01-1.07; I2 = 47%); very low birth weight (RR = 1.13, 95% CI: 1.01-1.25; I2 = 62%); and congenital malformation (RR = 1.11, 95% CI: 1.02-1.22; I2 = 30%). The relevant heterogeneity moderators have been identified by subgroup analysis. Sensitivity analysis yielded similar results. No evidence of publication bias was observed. Conclusion(s) Although the role of potential bias and evidence of heterogeneity should be carefully evaluated, the present study suggests that multiple pregnancies generated via ART, vs. spontaneous conception, are associated with higher risks of pregnancy-related complications and adverse pregnancy outcomes. Further research is needed to determine which aspect of ART poses the most risk and how this risk can be minimized. Copyright © 2015 American Society for Reproductive Medicine.

Database: EMBASE

11. Obstetric outcome after assisted conception

Author(s): Walmsley L.J.

Source: Obstetrics and Gynaecology Forum; 2014; vol. 24 (no. 4); p. 29-35

Publication Date: 2014

Publication Type(s): Review

Abstract:The uptake of ART is increasing worldwide with far reaching changes in clinical practice and available technology since the first IVF birth in 1978. Poorer obstetric and perinatal outcomes following ART compared with spontaneous conception have previously been attributed to multiple pregnancies but there is now also consistent evidence of compromised outcomes for singleton pregnancies. The cause for this is thought to be due both to the underlying subfertility as well as the ART technique. The majority of ART pregnancies will be uncomplicated and this should be emphasized. Discussions regarding possible maternal and perinatal risks should be included in the informed consent process with all couples considering ART.

Database: EMBASE

12. Twins should be delivered before 38 weeks of gestation: AGAINST

Author(s): Saugstad O.D.

Source: BJOG: An International Journal of Obstetrics and Gynaecology; Sep 2014; vol. 121 (no. 10); p. 1293

Publication Date: Sep 2014

Publication Type(s): Note

PubMedID: 25155320

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

Database: EMBASE

13. All twins should be delivered before 38 weeks of gestation: FOR.

Author(s): Jauniaux, E; Kilby, M

Source: BJOG : an international journal of obstetrics and gynaecology; Sep 2014; vol. 121 (no. 10); p. 1292

Publication Date: Sep 2014

Publication Type(s): Journal Article

PubMedID: 25155319

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

Database: Medline

14. Induction of Labour

Author(s): Leduc D.; Dy J.; Senikas V.; Biringer A.; Lee L.; Sawchuck D.; Corbett T.; Duperron L.; Lange I.; Muise S.; Parish B.; Regush L.; Wilson K.; Yeung G.; Crane J.; Gagnon R.

Source: Journal of Obstetrics and Gynaecology Canada; 2013; vol. 35 (no. 9); p. 840-857

Publication Date: 2013

Publication Type(s): Article

PubMedID: 24099451

Abstract:Objective: To review the most current literature in order to provide evidence-based recommendations to obstetrical care providers on induction of labour. Options: Intervention in a pregnancy with induction of labour. Outcomes: Appropriate timing and method of induction, appropriate mode of delivery, and optimal maternal and perinatal outcomes. Evidence: Published literature was retrieved through searches of PubMed, CINAHL, and The Cochrane Library in 2010 using appropriate controlled vocabulary (e.g., labour, induced, labour induction, cervical ripening) and key words (e.g., induce, induction, augmentation). Results were restricted to systematic reviews, randomized control trials/controlled clinical trials, and observational studies. There were no date or language restrictions. Searches were updated on a regular basis and incorporated in the guideline to the end of 2010. Grey (unpublished) literature was identified through searching the websites of health technology assessment and health technology-related agencies, clinical practice guideline collections, clinical trial registries, and national and international medical specialty societies. Values: The evidence in this document was rated using criteria described in the Report of the Canadian Task Force on Preventative Health Care (Table 1). Copyright © 2013 Society of Obstetricians and Gynaecologists of Canada.

Database: EMBASE

15. Obstetric and perinatal outcomes following in vitro fertilization

Author(s): Kapustova I.; Zubor P.; Biskupska-Bodova K.; Moricova P.; Svecova I.; Mendelova A.; Janusicova V.; Danko J.

Source: Journal of Perinatal Medicine; Jun 2013; vol. 41

Publication Date: Jun 2013

Publication Type(s): Conference Abstract

Abstract:Background: To compare the perinatal outcome of singleton and multiple (twin) pregnancies between natural and assisted conceptions and estimate whether pregnancies following in vitro fertilization (IVF) are at higher risk compared with spontaneous conceptions. Patients and methods: Inclusion criteria were pregnancies following IVF compared with spontaneous conceptions. A total of 89 IVF pregnancies were identified and managed at the Department of Obstetrics and Gynecology, Jessenius Faculty of Medicine, Martin. As controls we used 6886 deliveries following spontaneous conceptions during the same period. The odds ratio (OR) and 95% confidence intervals (95%CI), obtained from unconditional logistic regression, were used to set the association between IVF pregnancies and perinatal outcomes. The minimal statistical level of significance was set to $p = 0.05$. Results: 88 IVF and 6886 spontaneously conceived pregnancies were identified during 5 years study period (2008-2012). In crude analysis compared with spontaneous conceptions, IVF pregnancies were associated with significantly higher maternal age (mean 34.1 vs 29.5 yrs, $p < 0.001$), lower gestational age (38.1 vs 39.4 g.w., $p = 0.001$), lower parity (0.27 vs 0.75, $p < 0.001$), neonate birth weight (2809.3 vs 3241.5 gram, $p < 0.0001$), birth length (48.0 vs 50.5 cm, $p < 0.0001$), and Apgar score at 5th min. (8.6 vs 9.0, $p < 0.001$), respectively. After adjustment to number of pregnancies, gestational week, birth weight and mode of delivery we have found for singletons a increased risk for very preterm (< 32 weeks) (OR = 2.6, 95%CI 2.6-7.3), for preterm (< 37 weeks) birth (OR = 1.7,

95%CI 0.8-3.7), and risk of 2.9 (95%CI 1.1-8.2, $p < 0.05$) for very low birth weight (<1500 g), and 1.9 (95%CI 0.8-4.4) for low-birth weight (<2500 g) in pregnancies after assisted conception. In twins the risk of 0.2 (95%CI 0.1- 0.8, $p < 0.05$) was revealed for very low birth weight (<1500 g), and 0.5 (95%CI 0.3-1.0, $p < 0.05$) for low-birth weight (<2500 g) compared to control twins after spontaneous conception. The risks of caesarean section for singletons and twins after IVF compared to spontaneous pregnancies were 8.2 (95%CI 4.5-15.2, $p < 0.0001$) and 9.2 (95%CI 1.2-70.8, $p < 0.05$), respectively. Conclusion: Singleton pregnancies from assisted reproduction have a significantly worse perinatal outcome than non-assisted singleton pregnancies, but this is less so for twin pregnancies. In vitro fertilization patients should be advised of the increased risk for adverse perinatal outcomes. Obstetricians should not only manage these pregnancies as high risk but also avoid iatrogenic harm caused by elective preterm labor induction or cesarean.

Database: EMBASE

16. Adverse obstetric and perinatal outcomes of singleton pregnancies may be related to maternal factors associated with infertility rather than the type of assisted reproductive technology procedure used.

Author(s): Hayashi, Masako; Nakai, Akihito; Satoh, Shoji; Matsuda, Yoshio

Source: Fertility and sterility; Oct 2012; vol. 98 (no. 4); p. 922-928

Publication Date: Oct 2012

Publication Type(s): Journal Article

PubMedID: 22763098

Abstract:OBJECTIVE To compare obstetric and perinatal outcomes of singleton pregnancies conceived with different types of assisted reproductive technology (ART) procedures with those of naturally conceived pregnancies. DESIGN Retrospective cohort study. SETTING The perinatal database of the Japanese Society of Obstetrics and Gynecology. PATIENT(S) A total of 242,715 women with singleton pregnancies were examined as a base cohort. Three study groups were created according to the type of ART procedure used, namely ovulation stimulation medications ($n = 4,111$), IUI ($n = 2,351$), and IVF-ET ($n = 4,570$). Controls adjusted for multiple maternal characteristics were selected randomly for each study group. INTERVENTION(S) None. MAIN OUTCOME MEASURE(S) Obstetric and perinatal outcomes. RESULT(S) Patients who conceived through the ART procedures were associated with an increased incidence of placenta previa, preterm delivery, and low birth weight infant and a decreased incidence of spontaneous cephalic delivery, regardless of the type of ART procedure. CONCLUSION(S) Among singleton pregnancies, patients conceived with ART procedures were at increased risk for several adverse obstetric and perinatal outcomes, regardless of the type of ART procedure used. These results suggest that maternal factors associated with infertility may contribute to the adverse outcomes rather than the ART procedures themselves.

Database: Medline

17. Reproductive outcomes after assisted conception

Author(s): Talaulikar V.S.; Arulkumaran S.

Source: Obstetrical and Gynecological Survey; Sep 2012; vol. 67 (no. 9); p. 566-583

Publication Date: Sep 2012

Publication Type(s): Review

PubMedID: 22990460

Available in full text at [Obstetrical & gynecological survey](#). - from Ovid

Abstract:The last three decades have witnessed a dramatic increase in the use of assisted reproductive technology (ART) so that now, in developed countries, 1.7% to 4.0% of all children are born after ART. Although absolute risks appear small, data from prospective and retrospective studies indicate increased risks of adverse maternal and perinatal outcomes after ART as compared with spontaneous conception. Recent studies suggest that underlying maternal factors and subfertility play an important role in some of these outcomes rather than the ART procedure itself. A significant risk of assisted conception is multiple pregnancies, but even singleton pregnancies achieved by ART are at a higher risk of hypertensive disease, diabetes, prematurity, low birth weight, and perinatal mortality even after adjusting for confounders. Couples undergoing ART procedures should be counseled in advance regarding increased risks of pregnancy complications and higher rates of obstetric interventions. Although conflicting data exist, studies of children born from ART suggest increased rates of congenital malformations, imprinting disorders (Beckwith-Wiedemann syndrome and Angelman syndrome), and marginally increased risk of cancer. However, the current evidence is inadequate, and prospective long-term studies are needed to eliminate the effect of confounders and draw definite conclusions about the long-term outcomes after ART. The absolute risk of imprinting disorders remains small, and routine screening is not recommended at present. The long-term outcomes after ART are difficult to evaluate because of the variability in ART methods and data reporting, and there is a need for standardized methodology for follow-up after ART. **Target Audience:** Obstetricians and gynecologists, family physicians **Learning Objectives:** After completing this CME activity, physicians should be better able to critique the existing literature on birth outcomes after assisted conception, evaluate the factors that may be involved in causing an increased risk of adverse maternal and perinatal outcomes after assisted conception, and counsel women about risks of adverse pregnancy and long-term outcomes after assisted conception. Copyright © 2012 by Lippincott Williams & Wilkins.

Database: EMBASE

18. Perinatal outcome in singletons after modified natural cycle IVF and standard IVF with ovarian stimulation

Author(s): Pelinck M.-J.; Keizer M.H.; Hoek A.; Simons A.H.M.; Schelling K.; Heineman M.J.; Middelburg K.

Source: European Journal of Obstetrics Gynecology and Reproductive Biology; Jan 2010; vol. 148 (no. 1); p. 56-61

Publication Date: Jan 2010

Publication Type(s): Article

PubMedID: 19850400

Abstract:Objective: Singletons born after IVF treatment are at risk for adverse pregnancy outcome, the cause of which is unknown. The aim of the present study was to investigate the influence of ovarian stimulation on perinatal outcome. Study design: In this single-centre retrospective study, perinatal outcome of singleton pregnancies resulting from IVF treatment with (n = 106) and without ovarian stimulation (n = 84) were compared. For IVF without ovarian stimulation, a modified natural cycle protocol was used. Results: No differences were found in pregnancy duration, proportion of prematurity and proportion of low birth weight. Mean birth weight of modified natural cycle vs standard IVF singletons was 3485 (+/-527) vs 3218 (+/-670) g; P = 0.003. After adjustment for prognostic factors by linear regression analysis, the difference in birth weight remaining was 134 g; P = 0.045. Conclusions: Birth weights of modified natural cycle IVF singletons found in this study are higher than standard IVF singletons, suggesting that ovarian stimulation may be a causative factor in the occurrence of low birth weight in standard IVF. © 2009 Elsevier Ireland Ltd. All rights reserved.

Database: EMBASE

19. Indications for induction of labour: a best-evidence review.

Author(s): Mozurkewich, E; Chilimigras, J; Koepke, E; Keeton, K; King, V J

Source: BJOG : an international journal of obstetrics and gynaecology; Apr 2009; vol. 116 (no. 5); p. 626-636

Publication Date: Apr 2009

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

PubMedID: 19191776

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

Abstract:BACKGROUND Rates of labour induction are increasing. OBJECTIVE To review the evidence supporting indications for induction. SEARCH STRATEGY We listed indications for labour induction and then reviewed the evidence. We searched MEDLINE and the Cochrane Library between 1980 and April 2008 using several terms and combinations, including induction of labour, premature rupture of membranes, post-term pregnancy, preterm prelabour rupture of membranes (PROM), multiple gestation, suspected macrosomia, diabetes, gestational diabetes mellitus, cardiac disease, fetal anomalies, systemic lupus erythematosus, oligohydramnios, alloimmunization, rhesus disease, intrahepatic cholestasis of pregnancy (IHCP), and intrauterine growth restriction (IUGR). We performed a review of the literature supporting each indication. SELECTION CRITERIA We identified 1387 abstracts and reviewed 418 full text articles. We preferentially included high-quality systematic reviews or large randomised trials. Where no such studies existed, we included the best evidence available from smaller randomised trials and observational studies. MAIN RESULTS We included 34 full text articles. For each indication, we assigned levels of evidence and grades of recommendation based upon the GRADE system. Recommendations for induction of labour for post-term gestation,

PROM at term, and premature rupture of membranes near term with pulmonary maturity are supported by the evidence. Induction for IUGR before term reduces intrauterine fetal death, but increases caesarean deliveries and neonatal deaths. Evidence is insufficient to support induction for women with insulin-requiring diabetes, twin gestation, fetal macrosomia, oligohydramnios, cholestasis of pregnancy, maternal cardiac disease and fetal gastroschisis. AUTHORS' CONCLUSIONS Research is needed to determine risks and benefits of induction for many commonly advocated clinical indications.

Database: Medline

20. Pregnancy complications, obstetric risks, and neonatal outcome in singleton and twin pregnancies after GIFT and IVF.

Author(s): Ochsenkühn R; Strowitzki T; Gurtner M; Strauss A; Schulze A; Hepp H; Hillemanns P

Source: Archives of gynecology and obstetrics; Oct 2003; vol. 268 (no. 4); p. 256-261

Publication Date: Oct 2003

Publication Type(s): Journal Article

PubMedID: 12904987

Available in full text at [Archives of Gynecology and Obstetrics](#) - from Springer Link Journals

Abstract: PURPOSE: In vitro fertilization (IVF) and to a lower extent gamete intra-fallopian transfer (GIFT) have become routine infertility treatments in industrialized countries. Our purpose is to compare the obstetric and neonatal characteristics of singleton and twin pregnancies after GIFT and IVF with those conceived spontaneously. METHODS: This case-control study was conducted in a tertiary care medical center. The 322 singleton and 78 twin pregnancies after GIFT or IVF from 1991 through 1996 were evaluated and compared with each other, and with a control group that conceived spontaneously and matched for parity, maternal and gestational age. Statistical significance of differences was assessed by chi(2) test or two-tailed Fisher exact test. Continuous variables were compared by the paired t-test. RESULTS: Pregnancy-induced hypertension (PIH) and vaginal bleeding were significantly more frequent maternal complications in the GIFT/IVF singleton groups compared to controls. In twin pregnancies the rate of cesarean sections, vaginal bleeding and preterm labor were more common after GIFT/IVF but did not reach statistical significance. Assisted reproduction was associated with low birth weight only in twin pregnancies when controlled for confounding variables, however perinatal outcome was comparable. There was no significant difference in the outcome measures between GIFT and IVF pregnancies. CONCLUSION: After controlling for parity, maternal and gestational age, singleton pregnancies conceived by GIFT/IVF are at increased obstetrical risk, however the perinatal outcome is comparable despite a lower average birth weight.

Database: PubMed

21. Clinical trial of induction of labor versus expectant management in twin pregnancy

Author(s): Suzuki S.; Otsubo Y.; Sawa R.; Yoneyama Y.; Araki T.

Source: Gynecologic and Obstetric Investigation; 2000; vol. 49 (no. 1); p. 24-27

Publication Date: 2000

Publication Type(s): Article

PubMedID: 10629368

Available in full text at [Gynecologic and Obstetric Investigation](#) - from ProQuest

Abstract:The appropriate date of delivery in twin pregnancies is supposed to be earlier than that in singleton pregnancy. The aim of this study was to compare two strategies for managing twin pregnancies (i.e., immediate induction and expectant management). Methods: Seventeen patients underwent immediately induced labor by administration of oral prostaglandin E2 at 37 weeks, while 19 patients underwent expectant management. Results: The average gestational age at delivery in the induction group was 37.5 +/- 0.4 weeks, significantly earlier than that in the expectant management group (39.0 +/- 1.1 weeks). However, there were no significant differences in the average birth weight between the two groups (2700 +/- 330 g in the induction group vs. 2672 +/- 392 g in the expectant management group). The cesarean delivery rate in the induction group was 18%, not significantly different from that in the expectant management group (32%). The most common indication for cesarean section in the expectant management group was maternal infection, while there was no maternal infection in the induction group ($p = 0.08$). Conclusion: It may be acceptable to intervene in twin pregnancies earlier than in singleton pregnancies during term.

Database: EMBASE

Strategy 240919

#	Database	Search term	Results
1	Medline	(IVF).ti,ab	20086
2	Medline	exp "FERTILIZATION IN VITRO"/	31574
3	Medline	("in vitro" ADJ2 fertili*ation).ti,ab	20629
4	Medline	("invitro" ADJ2 fertili*ation).ti,ab	2866
5	Medline	(1 OR 2 OR 3 OR 4)	41995
6	Medline	((induced OR induction) ADJ3 (labor OR labour)).ti,ab	7529
8	Medline	("LABOR, INDUCED").ti,ab,af	8715
9	Medline	(6 OR 8)	11612
10	Medline	(5 AND 9)	36
11	Medline	("post term" OR postdate* OR "post date*").ti,ab,af	1510
12	Medline	(5 AND 11)	6
13	Medline	exp "PREGNANCY, PROLONGED"/	2591
14	Medline	(5 AND 13)	3
15	EMBASE	exp "IN VITRO FERTILIZATION"/	57608
16	EMBASE	exp "LABOR INDUCTION"/	13299
17	EMBASE	(15 AND 16)	64
18	EMBASE	exp "PROLONGED PREGNANCY"/	2719
19	EMBASE	(15 AND 18)	9

20	EMBASE	exp "INFERTILITY THERAPY"/	84850
21	EMBASE	(16 AND 20)	118
22	EMBASE	exp "CESAREAN SECTION"/	80433
23	EMBASE	exp "ELECTIVE SURGERY"/	27431
24	EMBASE	(15 AND 22 AND 23)	26
25	EMBASE	("full term" OR "term pregnancy" OR "pregnancy at term").ti,ab	21060
26	EMBASE	(15 AND 25)	408
27	EMBASE	(20 AND 22 AND 23)	42
28	EMBASE	exp "MULTIPLE PREGNANCY"/	22341
29	EMBASE	(16 AND 28)	412
30	Medline	(multiple ADJ2 (birth* OR pregnanc* OR gestation*)).ti,ab	9277
31	Medline	exp "MULTIPLE BIRTH OFFSPRING"/	26490
32	Medline	(30 OR 31)	34060
33	Medline	(9 AND 32)	259
34	Medline	exp "INFERTILITY, FEMALE"/	26138
35	Medline	(9 AND 34)	21
36	Medline	("40 weeks" OR "40 weeks").ti,ab	5706
37	Medline	(5 AND 36)	26
38	CINAHL	(IVF).ti,ab	994
39	CINAHL	("in vitro" ADJ2 fertili*ation).ti,ab	1118

40	CINAHL	("invitro" ADJ2 fertili*ation).ti,ab	4
41	CINAHL	exp "FERTILIZATION IN VITRO"/	2206
42	CINAHL	(38 OR 39 OR 40 OR 41)	2758
43	CINAHL	((induced OR induction) ADJ3 (labor OR labour)).ti,ab	1523
44	CINAHL	exp "LABOR, INDUCED"/	2017
45	CINAHL	(43 OR 44)	2616
46	CINAHL	(42 AND 45)	9
47	CINAHL	((cesarean* OR caesarean*) ADJ2 (elect* OR planned)).ti,ab	1061
48	CINAHL	(42 AND 47)	1
49	CINAHL	exp "PREGNANCY, PROLONGED"/	231
50	CINAHL	(42 AND 49)	0
51	CINAHL	exp INFERTILITY/	4393
52	CINAHL	(45 AND 51)	4
53	CINAHL	exp "CESAREAN SECTION, ELECTIVE"/	76
54	CINAHL	(42 AND 53)	1
55	Medline	exp "TIME FACTORS"/	1090648
56	Medline	(5 AND 55)	2196
57	Medline	(labor OR labour).ti,ab	85855
58	Medline	(56 AND 57)	8
59	Medline	(13 AND 32)	36

60	EMBASE	exp "PROLONGED PREGNANCY"/	2719
61	EMBASE	(28 AND 60)	93
62	Medline	exp "MATERNAL AGE"/	17713
63	Medline	(9 AND 62)	294
64	EMBASE	*AGE/	40128
65	EMBASE	(16 AND 64)	8
66	EMBASE	**"MATERNAL AGE"/ OR **"MATERNAL AGE 35 AND OVER"/	4133
67	EMBASE	(16 AND 66)	69
68	EMBASE	exp STILLBIRTH/	13772
69	EMBASE	(15 AND 68)	244
70	EMBASE	(spontaneous* ADJ2 (deliver* OR labor OR labour)).ti,ab	8825
71	EMBASE	(expectant*).ti,ab	7641
72	EMBASE	(70 OR 71)	16223
73	EMBASE	(15 AND 72)	179
74	EMBASE	(15 AND 70)	72
75	Medline	(spontaneous* ADJ2 (deliver* OR labor OR labour)).ti,ab	6850
76	Medline	(5 AND 75)	72
77	EMBASE	exp "HIGH RISK PREGNANCY"/	9512
78	EMBASE	(15 AND 77)	210
79	Medline	(high risk).ti,ab	0

81	PubMed	("high risk pregnancy").ti,ab	5613
82	PubMed	("high risk pregnancies").ti,ab	2050
83	PubMed	(81 OR 82)	7146
84	PubMed	(IVF OR "invitro fertilisation" OR 22369 "invitro fertilization" OR "assistive reproductive technology").ti,ab	
85	PubMed	(83 AND 84)	137
86	PubMed	(routine* ADJ2 induc*).ti,ab	23122
87	PubMed	(84 AND 86)	165
88	PubMed	(labour OR labor).ti,ab	965622
89	PubMed	(87 AND 88)	5
90	EMBASE	("40 weeks" OR "39 weeks").ti,ab	11236
91	EMBASE	(15 AND 90)	70
92	EMBASE	exp "INFERTILITY THERAPY"/	84866
93	EMBASE	(16 AND 92)	118
94	EMBASE	(induc* ADJ3 "at term").ti,ab	658
95	EMBASE	(92 AND 94)	7
96	EMBASE	("forty weeks").ti,ab	56
97	EMBASE	(92 AND 96)	0
98	EMBASE	exp "PROLONGED PREGNANCY"/	2720
99	EMBASE	(92 AND 98)	0
100	EMBASE	(18 AND 20)	15

101 PubMed	("40 weeks" OR "39 weeks").ti,ab	7096
102 Medline	("40 weeks" OR "39 weeks").ti,ab	7841
103 Medline	(9 AND 102)	272
104 Medline	exp "REPRODUCTIVE TECHNIQUES, ASSISTED"/	60616
105 Medline	(103 AND 104)	0
106 Medline	(9 AND 104)	57