Telementoring for fetoscopy and laser – Bridging the technology and expertise gap through remote collaboration, An Indo Paris effort

Article *in* BJOG An International Journal of Obstetrics & Gynaecology · April 2014

CITATIONS
0

READS
70

6 authors, including:

Suresh Seshadri
Mediscan systems
141 PUBLICATIONS **1,154** CITATIONS
SEE PROFILE

Uma Ram
Seethapathy Clinic & Hospital, Chennai, India
47 PUBLICATIONS **774** CITATIONS
SEE PROFILE

Indrani Suresh
mediscan system
71 PUBLICATIONS **282** CITATIONS
SEE PROFILE

M. Essaoui
Paris Descartes, CPSC
57 PUBLICATIONS **848** CITATIONS
SEE PROFILE

DOI: 10.1111/1471-0528.12777
www.bjog.org

Oral Presentations

Fetal Medicine

FC3.01

Laser photocoagulation for twin to twin transfusion syndrome and neonatal outcome – Our experience at a tertiary care referral neonatal center in Chennai

Swaminathan, L[1]; Suresh[2]; Shanmugasundaram[1]; Ibrahim, S[1]

[1]Mehta Childrens Hospital, Chennai, India; [2]Mediscan systems, Chennai, India

Introduction To analyse the outcome of six monochorionic twins with twin-twin transfusion syndrome (TTTS) treated by antenatal laser photo coagulation.
Method This was a 28-month retrospective study carried out from May 2010 to September 2012. All the monochorionic twins admitted in our NICU during study period were analysed. The age at diagnosis of TTTS, Quintero staging and age of laser photocoagulation were retrieved from antenatal records. Immediate neonatal problems and outcome were analysed.
Results During the study period 30 monochorionic twins were admitted to our NICU. TTTS was diagnosed antenatally in 6 pairs and they underwent laser photocoagulation. 24 pairs were monochorionic twins but antenatal ultrasound did not suggest a diagnosis of TTTS in the pre-laser period but 2 had features suggestive of TTTS postnatally and were managed. Six monochorionic twins who were diagnosed to have TTTS underwent laser photocoagulation at Mediscan, Chennai. All 6 twins were admitted in our NICU for neonatal care. Median age (range) of diagnosis of TTTS was 22.8(22–24) weeks. Two each were in quintero's stage I, II, and III respectively. Median age (range) of laser photocoagulation was 23(22–24.3) weeks. In utero demise of one fetus was seen. Median gestational age at delivery was 31(27–33) weeks. One pair of twin died postnatally one due to cardiac failure and other due to sepsis. One from other pair died due to sepsis. Three pairs went home well.
Conclusions TTTS diagnosis should be made antenatally and neonatal diagnosis is vague. Mortality in TTTS is quite high. Laser photocoagulation is the standard care for TTTS. 50% of the treated had intact survival of both twins. One third (2/6) had survival of one twin. Long term follow-up is required.

FC3.02

Telementoring for fetoscopy and laser – Bridging the technology and expertise gap through remote collaboration, An Indo Paris effort

Seshadri, S[1]; Ville, Y[2]; Ram, U[3]; Suresh, I[1]; Essaoui, M[2]; Ibrahim, A[2]

[1]Mediscan Systems, India; [2]Necker Hospital, Paris, France; [3]Seethapathy Clinic and Hospital, India

Introduction Mentoring, as a partnership in personal and professional growth and development, is central to academic and clinical medicine. With the advances in technology and internet, tele mentoring and e-mentoring are particularly useful in niche specialised areas.
Methods Mediscan systems is a large fetal medicine centre in Chennai, India. We set up a twin and fetosocpy unit to offer comprehensive management of complicated twins since in our series the incidence of MCDA twins was 21%. We entered into a collaborative effort with Necker Hospital Paris as a two stage process. The first stage was a 1 month in house orientation and exposure to fetosocpy and laser. The second stage was a decision to do telementoring in real time of the first 25 cases of fetoscopy and laser to shorten the learning curve. This was thought of as issues of registration do not allow hands on training in an overseas country. Equally it is not feasible to pool or gather a number of cases at a given time to enable a visiting expert to be present in house.
Results The telementoring was achieved by connecting the two centres via video conferencing providing live image transfer of both the ultrasound and fetoscopy images. This enabled a complete overview of the process from mapping cord insertions, planning the site of entry of the feotscope, identification of the anastamotic vessles and their ablation. The challenges that needed to be overcome were connectivity issues relating to signal quality and the timing of the procedure due to geographic time zone differences. For the mentor, remote orientation of the fetoscopic images and image quality was a challenge on some occasions. Prior to the procedure, the patient was introduced to the expert and this significantly improved their confidence as they were fully aware that the operator, though an experienced fetal medicine specialist, was relatively new to this procedure. The quality of image transfer and voice communication was excellent in most cases and enhanced the operator comfort and confidence. In all the 25 cases, the procedure was successfully completed without any per operative complications.
Conclusion This telementoring exercise has been extremely useful to us and we have since done 32 fetoscopic laser photocoagulation cases on our own. We strongly feel this model is replicatable for

making this technology available safely in countries where these centres need to be established.

FC3.03

Reproducibility of an image scoring system for crown rump length measurements

Wanyonyi, S[1]; Napolitano, R[2]; Ohuma, E[2]; Salomon, L[3]; Papageorhiou, A[2]

[1]Aga Khan University, Kenya; [2]University of Oxford, Oxford, UK; [3]Maternité Necker-Enfants Malades, AP-HP, Université Paris Descartes, Paris, France

Introduction Accurate measurement of the crown rump length (CRL) guides decisions regarding obstetric interventions such as prenatal testing, growth assessment and timing of labour induction. There is therefore need to develop reliable systems for quality control and training to ensure quality of first trimester imaging. The aim of this study was to develop and evaluate an objective image-scoring system for CRL measurements; and to determine how this compares to subjective assessment.
Methods A total of 125 CRL images were selected from the INTERGROWTH-21st study group database. Two reviewers, who were blinded to the operators and to each other, evaluated all images both subjectively and objectively. Subjective evaluation included rating an image as acceptable or unacceptable, while objective evaluation was based on six-point criteria. Reviewer differences for both the subjective and objective evaluation were compared using percentage of agreement and adjusted kappa values.
Results Distribution of individual scores and differences between subjective and objective evaluation for the two reviewers was similar. Overall agreement between the reviewers was higher for objective (95.2% adjusted kappa 0.904), compared to subjective evaluation (77.6%; adjusted kappa value = 0.552). There was a high level of agreement for horizontal position (k = 0.951), magnification (k = 0.919), visualisation of crown and rump (k = 0.806) and calliper placement (k = 0.756), while that of mid-sagittal section (k = 0.629) and neutral position (k = 0.565) was moderate and poor respectively.
Conclusions The proposed six-point scoring system for CRL image rating is more reproducible than subjective evaluation, and should be the preferred method for CRL quality assessment.

FC3.04

'To cerclage or not to cerclage' – An audit of mid-trimester miscarriages at Royal London Hospital, Barts Health NHS Trust, London UK 2011–12

Sivarajasingam, S; Kalenderian, M; Stewart, R; Wee, L

Royal London Hospital, Barts Health Trust, London, UK

Introduction The role of cervical cerclage to prevent mid-trimester miscarriages is advocated by the RCOG, however the timing of this cerclage is debated by many clincians. This audit was undertaken to assess whether offering cervical cerclage earlier than advocated by the RCOG could improve outcome.
Methods All patients who had a mid-trimester miscarriage (2011–12) were retrospectively analysed using a proforma, looking particularly at those suspected to have cervical incompetence. If they had subsequently become pregnant, their management and outcomes were analysed.
Results Fifty patients had a mid-trimester miscarriage over the 2 year period. One patient was lost to follow-up. The incidence of mid-trimester miscarriages was 1/180 deliveries. The age range was 20–44 with an average age of 30.8 years. 59% of women were of Asian ethnicity, representative of the population seen at this hospital. 16/49 (33%) women had no previous live birth, and 25/49 (51%) women had at least one previous live birth. In 9 patients exact parity was unclear. 14/49 (28%) women had cervical incompetence, 9/49 (18%) women had a placental cause, 3/49 (6%) had a combination of both. 4/49 (8%) women were diagnosed with an infective process with 1 (2%) woman having evidence of both cervical incompetence and infection. 6/49 (12%) women were diagnosed with an IUD and 7/49 (14%) had medical termination of pregnancy for fetal abnormalities. 1/49 miscarried due to twin-twin transfusion syndrome and 1/49 following an amniocentesis. In 3/49 the cause of the miscarriage was unclear. 8/14 women who had miscarriages thought to be due to cervical incompetence had subsequent pregnancies. Six of these women were offered an elective cervical cerclage with a history of only one or two previous mid-trimester miscarriages. Four of these women delivered at term. 2/8 women underwent ultrasound indicated cerclage, 1 woman delivered at term, the other unfortunately had another mid trimester miscarriage. However this woman delivered at term following an elective cervical cerclage in her third pregnancy.
Conclusion 2/3 of the women who had elective cervical cerclage earlier than recommended by the RCOG in their subsequent pregnancy had successful pregnancy outcomes. This may suggest that history indicated cerclage could be offered with as little as one previous mid-trimester miscarriage or pre term delivery. Number of patients included in this audit is small due to the nature of the condition; however we plan to strengthen our findings by analysing data from 2013.

FC3.05

Lack of association between low pregnancy-associated plasma protein (PAPP-A) in the first trimester with pregnancy outcomes.

Ranganathan, A; Johnson, H; Bastin, J; Sarkar, P

Heatherwood and Wexham Park Hospital Foundation Trust, UK

Introduction Low levels of pregnancy-associated plasma protein A (PAPP-A) in the first trimester have variably been shown to be associated with adverse fetal outcomes such as small for date and preterm birth. The objective of this study was to examine fetal outcomes in pregnancies with low PAPP-A to assist in the antenatal management.

Methods This is a hospital-based, retrospective study on pregnancies with low PAPPA in the first trimester. Low PAPP-A is defined as <0.4 multiples of median (MoM) and were measured between 11 weeks and 13 + 6 weeks. 5275 women underwent first trimester screening over the study period of 17 months from April 2012 to August 2013, of which 147 women were identified to have a low PAPP-A (<0.4 MoM). Three women with early miscarriage, 4 with chromosomal abnormalities and 2 with multiple pregnancies were excluded from the analysis. 16 pregnancies were lost to follow-up. Thus, 122 pregnancies with normal karyotype were included in the study. Other variables included in the analyses were hCG expressed as MoMs, nuchal translucency (mm) and combined risk expressed numerically. Fetal outcome measures were taken as birthweight and gestation at delivery. Data were analysed on SPSS 19. Spearman's rho was used for non-parametric correlations, and multinomial logistic regression to identify significant correlations. Subgroup analyses were undertaken with birthweights of ¡Ü 2500 g and with gestation at delivery of <37 weeks.

Results The median PAPP-A MoM was 0.339 with interquartile (IQR) between 0.286 −0.374. The minimum PAPP-A value was 0.004 and the maximum 3.780. Birthweight was normally distributed with a mean of 3006 g (SD = 696.25). The gestational range was 18 weeks (24–42 weeks) with a median at 39 weeks. No significant correlation could be identified with either birthweight or gestational age and PAPP-A. Logistic regression analysis confirmed the lack of significant correlations (beta = 0.228, $P = 0.308$ ns, $n = 122$). Subgroup analyses with birthweight Ü 2500 g ($n = 21$) and with gestational age at birth <37 weeks ($n = 12$) could not establish significant associations between PAPP-A and outcomes within these subgroups.

Conclusion This study could not identify a significant correlation between PAPP-A measured between 11 and 13 + 6 weeks with either birthweight or gestational age at delivery. Cut-off levels of 0.4 MoMs may have lesser sensitivity as a screen for identifying low birthweight and preterm delivery.

FC3.06

Case study: Successful intrauterine treatment of refractory fetal supraventricular tachycardia and hydrops by combination of Flecainide, Digoxin and Atenelol

Muppala, H; Ashworth, J

Royal Derby Hospital, Derby, UK

Background Fetal arrhythmias occur with a frequency ranging from 1–3% of all pregnancies. Most of these are transient, isolated ectopic beats. But sustained episodes of fetal tachyarrhythmias can result in congestive cardiac failure, hydrops, fetal demise and severe neurological morbidity in survivors. Fetal hydrops is associated with a mortality rate as high as 35%. Consequently, anti-arrhythmic treatment is offered to most affected pregnancies. There is 20% risk of treatment failure. Fetal mortality is reduced below 5–10%. Various anti-arrhythmics are used to treat supraventricular tachycardia and atrial flutter but the optimum regimen remain contentious. There are no reported cases in Pubmed of Atenelol use for fetal supraventricular tachycardia (SVT), possibly for fear of fetal growth restriction. There is very limited data on long term postnatal outcome of fetal tachyarrhythmias.

Case We present a case of refractory fetal SVT diagnosed at 23 + 3 weeks of gestation with moderate ascites, skin edema, pleural and pericardial effusions. No structural cardiac anomalies were noted. Oral Flecainide 100 mg thrice daily and Digoxin 125 mcg twice daily were commenced. Regular fetal scans, serum levels of Flecainide and Digoxin levels were checked along with maternal cardiac status. Flecainide was taper stopped at 24 + 3 weeks. SVT and hydrops recurred at 25 + 3 weeks. In liaison with Paediatric Cardiologist we recommenced on Flecainide 100 mg thrice daily along with addition of 50 mg twice daily oral Atenelol. Atenelol stopped at 28 + 1 weeks of gestation following sinus rhythm. Complete resolution of hydrops at 28 + 3 weeks. Linear growth of fetus noted with no further recurrence of SVT. Maintenance of sinus rhythm was achieved by combination of Flecainide and Digoxin. Induction of labour commenced at 39 + 1 weeks of gestation due to pregnancy induced hypertension. Baby was born in good condition at 39 + 3 weeks by emergency caesarean for suspected fetal compromise in early labour. Baby admitted to tertiary neonatal unit for observation. ECG and ECHO was normal, with minor patent foramen ovale. Baby was discharged on day 3 postnatal with paediatric cardiac clinic appointment in 4–6 weeks.

Conclusion This case highlights the role of multidisciplinary input in treating refractory fetal SVT and hydrops resulting in term birth of a normal fetus. Although Atenolol is known to impair fetal growth it may be considered as third line treatment in refractory cases. No serious drug related adverse events were observed. Postnatally infant remained in normal cardiac rhythm, and long term antiarrhythmic drug was not required.