The effect of advanced maternal age on pregnancy outcome in women with cervical insufficiency treated with cerclage

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Abstracts: Background: As a woman's age increases, infertility also increases. Women with cervical insufficiency seek pregnancy at advanced age. Objectives: This study quantifies pregnancy outcome in women with cervical incompetence according to maternal age. Methods: A register-based study conducted between May 1, 2010 to April 30, 2011 at MCH, Qassim, KSA. During this period, 8723 deliveries and 52 cases with cervical insufficiency were identified. Patients were divided according to maternal age into group 1 less than 35 years of age or group 2 at or greater than 35 years of age. Results: Out of these 52, 38(73.1%) comprised Group1 and 14 (26.9%) comprised group 2. Patients in group 2, were older, (40 vs. 27 years, P=0.00), of high gravidity (17 vs. 4, P=0.00), had less previous history of ERCP (14.3% vs.31.6% P=0.002), were likely delivered by caesarean section (0.002) and were less likely developed PROM (P=0.047). However, both groups (G1 and G2) were similar in gestational age at delivery (36.6 vs. 36.6 weeks, P=0.95), the abortion rate, [8(21.1%) vs. 2(14.3%), P=0.58], and the rate of preterm delivery, 3(10.3%) vs. 2(16.7%) respectively (P=0.57). Conclusion: pregnancy outcome in women with cervical incompetence and advanced maternal age is not influenced by maternal age. [Alsammani MA et al NJIRM 2012; 3(3) : 63-67]

Key words: age, maternal, cerclage, cervical, pregnancy outcomes

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Introduction: Pregnancy after the age of 35 years is associated with an increase in both maternal and perinatal morbidity and mortality[1]; the reasons of delay are multiple and include pursuance of professional careers and delaying of marriage. Women who got pregnant after the age of 35 were advised for prenatal genetic testing because of the significant increase in chromosomal abnormality associated with motherhood at an older age[2].

Women with cervical incompetence are of low parity due repeated pregnancy loss and they seek pregnancy even when they are older. In addition, there is an increasing trend to pregnancy over 40 years of age [3] [4]. Gilbert, et al.[5] stated that "Historically, women who desired to become pregnant after age 35 often were discouraged from considering pregnancy because of the increase in both maternal and perinatal morbidity and mortality". In clinical practice we see many cases of cervical incompetence seeking pregnancy in old age and they had low parity or may be nulliparous, do we need to advice them against pregnancy. This study quantifies pregnancy outcome in older women with cervical incompetence.

Material and Methods : In this retrospective study, a total of 52 women underwent cervical cerclage procedure at Maternity and Children Hospital, Buraidah, KSA from May 1, 2010 to April 30, 2011. Patients included in this study, if they had a history of two or more mid-trimester miscarriage or a history of preterm birth (less than 37 weeks gestations). Ultrasound was performed in all cases to confirm the gestational age and to exclude malformations. Patient's records notes were revised for detailed courses of previous pregnancies, pregnancy losses, and the course of the present pregnancy. The detailed of surgery, deliveries and post-operative care were meticulously revised.

Pre-operative investigations include CBC, Blood grouping and Rhesus factor and urine analysis for evidence of infections. Urine culture was done when it was necessary. In all patients a McDonald procedure was performed under general anesthesia with purse-string sutures of no. 5 silk inserted with tapered Mayo needle. Post-operative management in all patients includes bed rest for 2 to 3 days and intravenous antibiotics (Maxil 500mg twice per day for 2 days). Analgesia was used according to the surgeon preferences. During this period patients

were observed for uterine contraction, bleeding, abdominal pain and fever. At the time of discharge patients were instructed to follow-up regularly at the antenatal clinic and to report if developed draining of liquor, uterine contractions or signs of inflammations. The cerclage was removed electively at 37 weeks gestations. Tocolytics and betamethasone were prescribed when there was evident of preterm labor at less than 34 weeks gestation .The stitches were removed as an emergency if the patient developed premature rupture of membranes, preterm labor.

Maternal complications and outcome we have included were, maternal socio-demographic characteristics e.g. age, parity, gravidity and previous miscarriage rate. Other variables included such as number of previous cerclage, the gestation at delivery and miscarriage, birth weight, mode of delivery and Apgar score were also recorded. Patients were divided into two groups according to maternal age. Group 1consisted of all women who delivered at age less than 35 and group 2 consisted of all women who delivered at age 35or over; pregnancy outcomes between the two groups were compared. The study was approved by the ethic committee at Qassim University, Buriadah, KSA .Statistical analysis was performed using SPSS 15 for windows. Pregnancy outcomes and surgical procedure were compared using x^2 test, and the gestational, Apgar score ages and birth weights were compared using t test. X^2 was used to analyze gestational age fetal weight when they were categorized.

Result: We identified a total of 52 women who were treated by Mc Donald sutures placement for cervical insufficiency at Maternity and Children Hospital at Buraidah tertiary Hospital, KSA from May 1, 2010 to April 30, 2011. Out of these, 38(73.1%) were under 35 years of age (G 1), while 14(26.9%) were at or above 35 years of age (G 2). The majority of patients age 35 or older at the time of delivery are in their early 40s 10(71.5%). During this period 8723 deliveries were performed, this corresponds to 1 cervical procedure every 168 deliveries.

Table 1: Maternal characteristics of 52 women with cervical incompetence according to maternal age group

characteristics	Group 1 n=38(73.1)	Group 2 n=14(26.9)	P value
The mean maternal age(yrs)	26.8±3.37	40.0±2.41	0.000
Maternal age range (yrs)	21-32	36-42	
Gravidity	4±1.8	17±2.07	0.000
Previous cerclage	14(36.9)	8(57.2)	0.189
Previous abortion rate	2.4211±1.62134	2.1429±1.29241	0.56
ERCP	12(31.6)	2(14.3%)	0.002
Mean parity	2.2105±1.87671	1.4286±.93761	0.144
Primigravida Multigravida Grandmultipara	20(52.6) 18(47.4) (0)	(0) 6(42.9.1) 8(57.1%)	0.000

Data presented as Mean±SD or Frequency and (percentage), P value for maternal age, gravidity, gestational age at cerclage calculated by independent sample t-test and Chi Square were used for calculating it between other variables , P value of < 0.05 was set as statistically significant.

The demographic factors for the two groups are shown in table 1. The mean maternal ages for G 1 and G 2 were 27 and 40, ranged (28-40; 30-42) years, respectively. As expected with significant difference, (P= 0.00). There was no significant difference in the mean parity between the G 1and G 2 , 2.2, and 1.4 respectively, but there was a significant difference in the mean gravidity between G 1 and G 2, (4 vs. 17, P=0.00) respectively, indicating high rate of previous pregnancy loss in the older age group. Women in group 1 were most likely managed by ERCP when aborted compared to older women who were most likely managed expectantly (P=0.002).

Table 2: depicts pregnancy outcome in 52 women with cervical incompetence according to maternal age range

Pregnancy outcome	Group 1 N=38	Group 2 N=14	P value
Abortion rate	8(21.1)	2(14.3)	0.58
Mean gestational age at delivery	36.6000±3.46012	36.6667±3.	0.95
Range(yrs)	28-40	30-40	
Rate of C/S	4(10.5)	8(57.1)	0.002
Preterm in less than 33 weeks gestations	3(10.3)	2(16.7)	0.57
Fetal birth weight(kg)	2.5419±.97716	2.3667±.7547	0.57
Fetal weight range (kg)	.85-3.4	1.2-3.2	
Apgar score	6.8421±3.73823	6.4286±2.92770	0.711
prom	8(26.7)	(0)	0.047

Data presented as Mean±SD or Frequency and (percentage), P value for age, fetal weight and Apgar score was calculated by independent sample t-test and Chi Square were used for calculating it between other variables, P value of < 0.05 was set as statistically significant.

The adverse pregnancy outcomes are shown in table 2.The overall, miscarriage rate was15.4%. Patients in group 1 had an increased rate of early pregnancy loss, but not significantly (P=0.58), 8(21.1%) compared to 2(14.3%). The mean gestational ages at delivery were similar in the first and the second group, (36.6, range 28-40 weeks); and (36.66, range 30-40weeks), (P=0. 0.95), with no difference in the Apgar score between the two groups (P=0.711). When 33 weeks was taken as a cut-off points for gestational age, there was no statistically significant differences in preterm deliveries between the first and the second group, 3(10.3%) and 2(16.7%) respectively (P=0.57). Fetal weight was not influenced by maternal age. The mean birth weight for the first group was (2.5, range .85-3.4kgs) compared to (2.4 range 1.2-3.2kg) for the second group, there was no statistical difference (P=0. 0.57). patients in the first group were more likely to experienced morbidity from caesarean section morbidity and premature rupture of the membranes significantly as compared to the second group, (P= 0.002) and (P=0.047) respectively.

Discussion: In the present data the prevalence of women with advanced maternal age was 26.9% and the overall spontaneous abortion rate was 19.2%, which is comparable to previously published data by Lidegaard[6], who demonstrated an incidence of 17.6% in a ten-year survey. He also found that the incidence of abortion in patients with cervical cerclage increased with the increase in the maternal age. Published data exploring the correlation between advanced maternal age and pregnancies outcome is a conflicting one. Several studies have concluded that advanced age have a higher frequency of spontaneous abortion [7, 8, 9,] while other stated that advanced maternal age does not influenced spontaneous abortion rate. In most of cases of In-vitro-fertilization the procedure is performed at advanced age, Devroey et al., in a large series, involving donor-embryo recipient found that the rate of spontaneous abortions did not increase with advanced age although most of these recipients were less than 50 years of age. In one investigation there was notable lack of maternal and fetal complications in women older than 50 years who had conceived spontaneously [10]. These similarities in the outcomes could be due to the presence of modern tertiary care given to women with advanced age[11]. In a large series involving 6,619 singleton pregnanciesWang[12] concluded that advanced maternal age had no significant effect on obstetric and perinatal outcomes irrespective of parity. Our study demonstrated that there was no difference in the rate of abortion between advanced age and younger age group (P=0.58), indicating that even in patients with incompetence cervix maternal age does not influenced the rate of spontaneous abortion.

Our study revealed a high rate of caesarean delivery in mothers who are giving birth at age 35 or older 57.1%, as compared to younger women 10.5% (P=0.002). All published data are in agreement that advance age significantly influenced the rate of caesarean section [13, 14, 15]. It was found that the variables most influencing the caesarean delivery rate were maternal age, analgesia, parity, PROM and gestational hypertension [16, 17]. Recently O'Dwyer[18], demonstrated in 112 326 women delivered 114 170 infants weighing at least 500 g the cesarean rate increased from 14.1% in 1995 to 26.5% in 2009 (20.0% overall). The increase rate of cesarean section is not influenced by parity [19, 20]. Although cervical incompetence is not an indication of cesarean section, in the present study a similar high rate of cesarean delivery was also demonstrated in older age group (P=0.002) .There are many possible reasons that could lead to cesarean delivery in this group, one reason is that this group of patients were older with decreased fertility, and their relatively low parity makes elevates the premium of their current pregnancy. In addition physician preference for caesarean delivery in these subjects and increase demands for caesarean section by partners for optimal outcome.
Our data revealed that in the younger mothers, the rate of preterm delivery was 10.3% compared to 16.7% in the older mothers , and the mean gestational ages in the two groups were almost equal [(36.6 vs. 36 weeks, respectively, P=.95)], indicating that advanced maternal age is not associated with a rise in the rate of prematurity. Some authors reported a rise in prematurity with age advanced age [21, 22], but more recently Kanungo Jet al. [17] reported with an increasing maternal age there was increase in the fetal survival and reduction of sepsis without major morbidity. In our study, the increase in the fetal survival could be attributed to the use of tocolytics and betamethasone.

Recently, a meta-analysis reported by Berghella et al. [23] demonstrated a significant reduction in preterm birth in the cerclage group compared with the no cerclage group in 208 singleton gestations, with both groups having a previous preterm birth. This was supported by the final report of the Medical Research Council/Royal College of Obstetricians and Gynecologists, which in a group of randomly allocated, multicenter patients showed a significant reduction in the preterm deliveries in less than 33 weeks gestation in cerclage vs. non-cerclage patients [24].

Other pregnancy outcome were similar in both younger and women with advance age. Finally, it is difficult to attribute these similarities in pregnancy outcomes to cerclage, Harger et al.[25] demonstrated spontaneous pregnancy success rates of at least 71-77% following two or more consecutive pregnancy losses in a prospective study of 155 cases. With exception for a significantly increased rate of caesarean sections there were no significant differences in other parameters of pregnancy outcome. It appears that in older mother in the absence of age-related founders' pregnancy outcome would be comparable with younger age group.

Conclusion: In this study, it appears that pregnancy outcome in women with an incompetent cervix does not seem to be influenced by maternal age. The shortcomings of this study include its retrospective nature and the small size of the study population. In this study about 1 cervical procedure is performed in every 168 deliveries which correlate closely to international rates indicating physician awareness and adherence to diagnostic criteria for incompetent cervix. Further prospective studies are needed to determine this relationship.

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