Original Article

Aetiology of involuntary infertility following caesarean birth in last pregnancy

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ABSTRACT

Objective: In sub Saharan Africa, infertility and caesarean section are important clinical entities in obstetrics and gynaecological practice. The association of infertility with caesarean section commonly performed to prevent maternal/perinatal morbidity and mortality is a source of concern. Our objective was to find out the causes of infertility in women who had caesarean section in their last pregnancy.

Methodology: In this prospective observational study, sixty eight patients presented between January 2004 and December 2009, however 57 fulfilled the study criteria. They were all delivered by caesarean section in the last pregnancy.

Results: The mean age of the 68 patients was 32.2 years with age range of 23 to38 years. The median parity was 2 with a range of 1 to 6. Mean duration of infertility was 2.4 years. Nine (13.2%) of the 68 caesarean sections were repeat section. Forty eight (70.6%) of the 68 caesarean sections were done on an emergent basis. The three leading indications for the index section were prolonged obstructed labour 29(42.6%), severe pre-eclampsia/ eclampsia 11 (16.2%) and failed induction of labour 11(13.2%). Aetiology of infertility in the 57 patients that fulfilled the criteria are tubal occlusion 38(66.7%), intrauterine adhesion 9(15.8%), concomitant tubal occlusion and intrauterine adhesion 7(12.3%) and hyperprolactinaemia in 3(5.3%).

Conclusion: In this study, a significant percentage of indications for the index caesarean section and aetiologies of infertility may be linked to peri-operative genital sepsis resulting in infertility. Timely utilization and accessibility to emergency obstetric care would help decrease the incidence of infertility following caesarean delivery.

KEY WORDS: Caesarean section; Infertility; Peri-operative genital sepsis, Aetiology.

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INTRODUCTION

Infertility and caesarean section are important entities in obstetrics and gynaecological practise. In sub-Saharan Africa, timely and judicious application of caesarean section is an important tool in the prevention of maternal and perinatal mortality and morbidity.[1] Similar to reports emanating from developed countries[2,3], the incidence of caesarean section appears to be increasing in Nigeria.[4] Commonly cited reasons for this increase includes over diagnosis of cephalopelvic disproportion, foetal distress in labour, breech presentation, poor progress in labour, repeat caesarean section and non functioning instruments or lack of expertise to perform assisted vaginal deliveries.[5]

However, studies have shown that caesarean section is comparatively associated with higher maternal morbidity and mortality than vaginal delivery.[6] Some of these morbidities may be associated with future infertility, thereby increasing the already high prevalence of infertility in Africa which was reported to be in the range of 15 to 46%.[7] Infertility is a known long term complication of caesarean section. However, the association is said to be complex and multidimensional.[8] Post caesarean section infertility may be voluntary or involuntary.[9]

A major percentage of post caesarean section voluntary infertility are attributable to reasons relating to the past caesarean section experience.[9] These reasons are mainly psychological, like fear feeling angry, disappointed or upset, problems relating to marital adjustment, bonding with babies, delayed establishment of breastfeeding and postnatal depression.[8] With the increasing burden of infertility in our society, it is imperative to constantly evaluate the aetiology, with a view to finding the preventable causes and proffer realistic solutions. Based on this background we studied the causes of infertility in infertile women that had caesarean section in their last pregnancy.

METHODOLOGY

Over a period of six years, sixty eight patients were seen with complaint of delayed conception following caesarean section in their last pregnancy. They were managed between January 2004 and December 2009 at two public hospitals (Ahmadu Bello University Teaching Hospitals, 345 Aeromedical Hospital) and one privately owned hospital (Alba Clinics and Medical Centre) in Kaduna state, Northern Nigeria. They all had evaluation for infertility which included history, physical examination and investigations. Among the investigations are serum prolactin, hysterosalpingography, sonographic assessment of the uterus and follicular tracking.

Criteria for inclusion were, absence of pregnancy after last delivery (caesarean section), and no previous history of infertility.

Table-I: Indications for index caesarean section.

Indications	*N=68*	*%*
Prolong obstructed labour/ obstructed labour	29	42.6
Severe pre-eclampsia / eclampsia	11	16.2
Failed induction of labour	9	13.2
Failed trial of scar	7	10.3
Macrosomia	3	4.4
Fetal distress	4	5.9
Placenta praevia	3	4.4
2 previous caesarean section	2	2.9

RESULTS

Sixty eight patients were seen between January 2004 and December 2009, their mean age was 32.2 years (range of 23 to 38 years). Median parity was 2 with range of 1 to 6. Nine (13.2%) of the last caesarean sections were repeat caesarean sections and 59 (86.8%) were primary caesarean sections. Mean duration of infertility was 2.4 years with range of 1.5 to 4.5 years. Timing of the caesarean section revealed 48 (70.6%) emergency and 20 (29.4%) elective caesarean sections. Indications for the index caesarean sections (Table-I) were prolong obstructed labour/ obstructed labour 29 (42.6%), severe pre-eclampsia / eclampsia 11 (16.2%), failed induction of labour 9(13.2%), failed trial of scar 7(10.3%), fetal distress 4(5.9%), macrosomia 3(4.4%), 2 previous caesarean section 2(2.9%) and placenta praevia in 3 (4.4%) patients.

Aetiology of infertility in the 57 patients that fulfilled the study criteria were tubal occlusion 38 (66.7%), intrauterine adhesion 9 (15.8%), intrauterine adhesion with tubal occlusion 7 (12.3%) and hyperprolactinaemic anovulation in 3 (5.3%) patients (Table-II). Hysterosalpingographic assessment of the 38 patients with solely tubal occlusion revealed 29 (76.3%) bilateral incomplete distal tubal occlusion, 7 (18.4%) bilateral complete distal tubal occlusion and 2 (5.3%) bilateral cornual occlusion. The 7 patients with concurrent intrauterine adhesion and tubal occlusion all had bilateral cornual occlusion (Table-III). One (2.6%) of the 38 patients with solely tubal occlusion had tuboplasty for bilateral complete fimbrial end blockage before last conception was achieved.

DISCUSSION

Caesarean section is a life saving surgical procedure that is associated with minimal maternal

Table-II: Aetiology of infertility.

Aetiology	*N=57*	*%*
Tubal occlusion	38	66.7
Intrauterine adhesion	9	15.8
Tubal occlusion and IUA	7	12.3
Hyperprolactinaemia	3	5.3

* IUA – Intra uterine adhesion

Table-III: Hysterosalpingographic pattern of tubal occlusion.

Solely Tubal Blockage	*N=38*	*%*
Bilateral incomplete distal occlusion	29	76.3
Bilateral complete distal occlusion	7	18.4
Bilateral cornual occlusion	2	5.3
Concomitant IUA & Tubal Blockage	*N=7*	*%*
Bilateral cornual occlusion	7	100

* IUA - Intrauterine Adhesion

mortality and morbidity when performed promptly in an ideal situation; however the situation in most developing countries are far from ideal.[1] In this study, timing of caesarean section which was mainly emergency and prolonged obstructed labour as the most common indication for the index caesarean section are the most common risk factors found. Both risk factors are known to have proximate link to genital sepsis which is a common denominator for the leading aetiologic factors of infertility in sub-Saharan Africa.[10] Studies have shown that emergency caesarean section is associated with higher complication rate among which is genital sepsis and its long term effect.[11,12] Furthermore, the frequency of post-operative sepsis is significantly greater when caesarean section is performed during labour or in the presence of intra-uterine infection.[13] Obstructed labour, which was the leading indication for caesarean section in this study, is rarely seen in the developed world due to well organised social and obstetrics services.[14] Obstructed labour is a major contributor to maternal morbidity, which include wound sepsis, ruptured uterus and puerperal sepsis.[15]

Secondary infertility after caesarean section was mainly attributed to medical causes.[16] These causes are from effect of pelvic adhesions, infections or placental bed disruption.[17] Although authors have reported that uncomplicated caesarean section was not associated with uterine or tubal infertility.[18] Tubal occlusion followed by intra-uterine adhesion were the leading aetiology of infertility among the patients studied; this may not be unrelated to peri-operative sepsis complicating caesarean section. Studies have reported link between pelvic abscess complicating caesarean section and subsequent infertility.[19] In this study, only 5.3 percent of patients had aetiologic factor (hyperprolactinaemia) not related to organic pelvic pathology and peri-operative caesarean section sepsis. Major sources of morbidity associated with caesarean section relate to complications of maternal sepsis, anaesthesia and thromboembolic disease.[11] Postpartum infection is the most frequent complication arising from caesarean delivery and the highest incidence occurs in indigent patient undergoing caesarean section after an extended labour and prolonged rupture of membrane.[14] Authors in Nigeria reported a hundred percent occurrence of puerperal sepsis in patients with obstructed labour, another series recorded post-operative endometritis in about thirty percent of patients that had caesarean section.[1]

In this series, sepsis is an important premorbid recurring factor underlying the two leading aetiological factor of female infertility following caesarean section at last pregnancy, and this borders on timely utilization and availability of qualitative maternity services. Governmental, societal and individual efforts should be directed at improving accessibility to maternal health care in developing countries. This can be achieved by alleviating peculiar factors that causes delay at getting timely medical care and intervention in the developing world. These delays have been divided into Phase I, II and III. Phase I- delays in initial decision to seek care, Phase II- delay in woman arrival at the medical facility and Phase – III are delays that occurs once a woman has arrived at the medical facility.[20] Factors responsible for these delays include poverty, cultural impediment to seeking orthodox health care, poor infrastructure and multifactorial delay of treatment at the health facilities. Improvement in maternal care and especially accessibility to emergency obstetric care would go a long way at decreasing the incidence of female infertility, sustained in the process of trying to restore and maintain the human race.

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