UTERINE RUPTURE AN OBSTETRICS CATASTROPHY; INCIDENCE, RISK FACTORS, MANAGEMENT AND OUTCOME AT ABUBAKAR TAFAWA BALEWA UNIVERSITY TEACHING HOSPITAL BAUCHI NIGERIA.

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ABSTRACT

Context: Ruptured uterus is still an important obstetrics complication because it contributes significantly to both maternal and foetal morbidity and mortality in our setting. Therefore there is a need to further evaluate its causes and the outcome of its management.

Objective: To determine the incidence, risk factors, management and outcome of ruptured uterus in our centre and thus provide a baseline data on the subject for comparison in the future as the hospital is now upgraded to a Teaching Hospital.

Materials and Methods: A two year retrospective review carried out on 67 patients that were managed for uterine rupture during the study period. Data was obtained from patients' case files, labour ward registry, theatre registry, admission /discharge registry and entered into a proforma. Descriptive analysis was done with SPSS software (version16.0).

Results: There were a total of 19,412 deliveries in the review period out of which there were 67 ruptured uteri. The incidence of ruptured uterus is 0.35% and the common risk factors include high parity, exposure to oxytocin in labour, scar on the uterus, prolonged labour and unbooked status. Foetal mortality was 100% and maternal mortality 13.4%. Wound sepsis/dehiscence, vesicovaginal fistula and anaemia were the common complications in this study.

Conclusion: Ruptured uterus remains an important obstetrics problem in our centre. It is associated with high maternal mortality and foetal mortality. More effort is needed to reduce this obstetrics problem.

Key Words: Uterine rupture, Risk factors, Management, outcome, Bauchi.

INTRODUCTION

Uterine rupture is a catastrophic event that occurs during pregnancy and childbirth. It is defined as the breach of myometrial wall integrity[1]. In a complete rupture there is full thickness separation of the uterine wall with the expulsion of the foetus and/or placenta into the abdominal cavity, whereas in incomplete rupture the overlying serosa or peritoneum is spared[2].

This obstetric calamity exists wherever feto-maternal care services are nonexistent or inefficient as in the case of most countries in Sub-Saharan Africa. It is closely associated with neglected obstructed labour and is closely followed by maternal mortality like a shadow. Wherever maternal mortality is high the incidence of ruptured uterus is also high and this is the reality of our situation in developing countries. Uterine rupture is an entity that clearly exposes the inequities and precarious state of our health care system and the failure of society at large to accord the lives of women the value it deserves. The condition demonstrates the failure of developing countries to replicate the success story of developed countries in terms of improving the quality of life of women and significant reduction in maternal mortality despite all the programmes on ground. It has the potential to impact negatively on the attainment of the Millennium Development Goals 4 and 5 because it contributes significantly to maternal and foetal mortalities which these Goals seek to reduce.

Maternal mortality is very high in Nigeria and ruptured uterus contributes significantly to it. Maternal mortality rate in Nigeria is 800/100,000[3] but it varies from one Geopolitical zone to another. The highest maternal mortality rate is in the North East Zone (1,549/100,00[4]). Bauchi State where our hospital is situated is in this Geopolitical Zone and its Maternal Mortality rate falls within the Zonal average. Concerted action is required to fully

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address this issue. This however may not be achieved without reducing the rate of obstructed labour which account for 11% of Maternal Mortality[5]. By reducing the rate of obstructed labour the rate of ruptured uterus is likely to be reduced as it is one of the complications of obstructed labour.

The incidence of ruptured uterus differs between the developed and developing countries and also may differ within the same country. A meta-analysis of data from industrialized countries suggests that modern rate of unscarred uterine rupture during pregnancy is 0.013% (1 in 7440 deliveries)[6]. In Ireland the rate of unscarred uterine rupture was 1 in 30,764 deliveries (0.0033%)[7]. In developing countries an incidence of 0.11% (1 in 920 deliveries)[8] has been recorded. In Uganda an incidence of 1.1% (1 in 93 deliveries) was reported in 1960[9] ,however in 2007 it was reported to be 0.50% (1 in 200[10]) a significant improvement.

In the Tigray region of Ethiopia an incidence of 0.91% (1 in 110 deliveries) was reported in 2001[11] however in the same country an incidence of 3.85% (1 in 26 deliveries) was reported in the region of Debre Markos 2004[12] a marked disparity. In Ghana Adanu et al reported an incidence of 0.24% (1 in 425 deliveries) in 2003[13] but in another study in 2008 an incidence of 0.81% (1 in 124 deliveries) was reported[14] implying a rising trend. In Nigeria a report from Kaduna in the North showed an incidence of 0.60% (1 in 167 deliveries) in 2008[15]. In 2001 a study from Ilorin Central Nigeria gave an incidence o f 0.48% (1 in 210 deliveries[16]) and another study from Calabar in the South reported an incidence of 0.47% (1 in 213 deliveries) in 2008[17].

Uterine rupture as a clinical entity has multiple causes and risk factors. The causes may differ from developed to developing countries. In developed countries where all women are supervised in labour, rupture usually occur in those women exposed to oxytocin or have scarred uterus[18]. In contrast in developing countries where in most cases labour takes place at home and unsupervised the common cause is cephalopelvic disproportion leading to obstruction and eventually rupture[19]. Cephalopelvic disproportion and obstructed labour may be secondary to multiple social and economic factors such as illiteracy and poverty. Where these factors are reduced to a minimum uterine rupture is uncommon.

Rupture of the uterus may be complicated by maternal and/ or foetal mortality and morbidity such as bladder rupture, vesico-vaginal and recto-vaginal fistula, foot drop, and psychological trauma[20]. Other complications include foetal asphyxia, foetal death, wound sepsis and dehiscence, anaemia and on a long term either from its complication or treatment the woman may become infertile.

The treatment of ruptured uterus depends primarily on the patient's clinical state; however other factors worth considering include patient's desire for child bearing, and the surgeon's experience. It is important to emphasize that the surgeon should always opt for the fastest, simplest and safest procedure if patient's life is to be preserved. The options include, repair of the rent with or without sterilization, subtotal or total hysterectomy[21].

The foregoing revealed that the picture is grim and no matter how one looks at it one realises that ruptured uterus is very much with us in the developing countries and that there is international and national variation in the incidence hence the need for more studies in this area. The study is aimed at determining the incidence, risk factors, management and outcome of ruptured uteri in Abubakar Tafawa Balewa University Teaching Hospital Bauchi and to obtain a baseline data that will provide a basis for comparison in the future as further efforts are put in place to change this grim situation.

The Abubakar Tafawa Balewa University Teaching Hospital was a State Specialist Hospital until October 2010 when it was upgraded to the status of a teaching hospital. It serves as a referral centre for most of the local government areas of the state and some parts of the neighbouring Jigawa state. It is currently undergoing significant physical and manpower development to meet the requirements of its new status.

MATERIAL AND METHODS

A 2 year retrospective study on uterine rupture was conducted from 1st March 2009 to 28th February 2011 in the hospital. A proforma was developed to collect data from the delivery registry, patients case files, theatre registry, and admission/discharge registry from the wards. The relevant data collected include age, parity, booking status of patients, past history of uterine scar, history of exposure to oxytocin in current labour, duration of labour, type of surgery carried out, foetal outcome, and complications including maternal mortality. Data was entered and analyzed using SPSS software for windows version 16.0 and presented in form of tables.

RESULTS

During the study period there were 19,412 deliveries out of which 67 had uterine rupture giving an incidence of 0.35% i.e. 1 in 290 deliveries.

Table 1: Distribution of patients according to age

Age	Frequency	Percentage
15-19	3	4.4
20-24	17	25.4
25-29	15	22.4
30-34	12	17.9
35->	20	29.9

DISTRIBUTION OF PATIENTS ACCORDING TO PARITY

Parity	Frequency	Percentage
0	6	9.0
1	8	11.9
2	9	13.4
3	10	14.9
4	2	3.0
5->	32	47.8

Table: 2 Risk factors for uterine rupture

Presence of uterine scar	Frequency	Percentage
Present	6	9.0
Absent	61	91.0
Exposure to oxytocin	**Frequency**	**Percentage**
Exposed	22	32.8
Not exposed	45	67.2
Duration of labour	**Frequency**	**Percentage**
<12hours	16	23.9
>12hours	51	76.1
Booking status	**Frequency**	**Percentage**
Booked	17	25.4
Unbooked	50	74.6

Table 3: Management of uterine rupture

	Frequency	Percentage
Repair of the rent	22	32.9
Repair and sterilization	25	37.4
Subtotal hysterectomy	9	13.4
Total hysterectomy	11	16.4

Table 4: Complications of uterine rupture

	Frequency	Percentage
None	36	53.7
Maternal mortality	9	13.4
Wound sepsis	7	10.4
Wound dehiscence	4	5.9
Anaemia	8	11.9
Vesico-vaginal fistula	3	4.7

DISCUSSIONS

There were a total of 67 ruptured uteri and 19,422 deliveries during the study period, giving a ratio of 1 ruptured uterus in every 290 deliveries (0.35%). This is lower than 1 in 120 (0.83%)[24] reported from Azare in the same state. The reason may be because Azare is more rural with more transportation problems and therefore patients present late when complications arise. It is also lower than what was reported from studies elsewhere[2,13,15,19] and much lower than 1:26 reported from Ethiopia[7]. The result is close to 1:271 from a study in Niger Delta Nigeria[20]. The variations in incidences indicate that even though all the studies were from developing countries, it showed that the quality of maternal care available to women differ from region to region even in these countries.

The factors that influence the incidences also differ from locality to locality. The age of patients presenting with uterine rupture in the study ranges between 18 and 43 years. The incidence is highest in the age group 35years and above (29.9%), other studies revealed similar results[15,19]. A study from Uganda however revealed that the incidence is

highest in the age group 20 to 24years[8]. There may be other compounding factors which may be responsible for this difference e.g. frequency of uterine scar. It may also be that the older women in the Ugandan study avail themselves to hospital delivery more than the younger and inexperienced women who probably present when it is already too late. The lowest incidence in this study is in the age group 15 to 19 years (4.4%). This is expected because the patients in this age group were mainly primigravidae and uterine rupture is less likely in them compared to high parity patients.

The parity of patients in the study ranges between 0 and 13 and the incidence is highest in those whose parity is 5 and above (47.8%) and lowest in those whose parity is 0. This is similar to the results from other studies[2,10,14,21,22]. High parity is an important risk factor for uterine rupture because with increasing parity the uterine smooth muscle is progressively replaced by fibrous connective tissue and therefore weaker and at greater risk of rupture. High parity is also associated with malpresentations and malpositions leading to prolonged and obstructed labour and subsequently rupture of the uterus. The presence of a scar on the uterus is recognised to be a risk factor for uterine rupture and this study showed that 9% of patients had scar on their uteri from previous surgeries. Even though this is a small percentage of those that had uterine rupture the presence of scar is known to increase the risk uterine rupture. Studies have indicated greater risk of uterine rupture in women who had a scar in their uteri[8,9,13,23].

Another important risk factor for uterine rupture is the use of uterotonics especially when used injudiciously. About 32.2% of women who had uterine rupture in the study were exposed to oxytocin in labour before they rupture. A study from Ilorin showed that 39% of patients with uterine ruptured were exposed to oxytocin in labour prior to rupture[11]. Other studies also revealed the importance of oxytocics as risk factors for uterine rupture[19,21,23].

The booking status of patients may indirectly impact on their risk for uterine rupture because those that are booked are likely to be well informed about the risk factors and are more likely to seek care before rupture and are likely to prepare for emergency before it arise. In this study 74.6% of those that had rupture were unbooked and similar studies have also shown that patients that did not book for antenatal care stand a greater risk for uterine rupture[8,13,15,21].

The definitive management for uterine rupture is determined by the patient's clinical state, desire for further child bearing and the experience of the surgeon. About 32.9% of patients had repair of the uterine rent, 37.4% had repair and sterilization, 13.4% had subtotal hysterectomy and 16.4% had total hysterectomy. Complications sustained by patients include wound sepsis 10.4%, wound dehiscence 5.9%, anaemia 11.9%, vesico-vaginal fistula 4.7%. Maternal mortality stands at 13.4% which is higher than what was obtained in other studies[2,8,9]. In another study from Irbid Jordan no maternal mortality was recorded probably because rupture was detected early with the patient in hospital or their patients presented very early. In this study there was no foetal survival because almost all patients presented very late. In one study intrauterine foetal death was 92%[14] and in another it was found to be 93%[8]. Maternal and foetal survival depends very much on early presentation, early detection of features heralding maternal or foetal jeopardy and the availability of facilities and personnel that can assist in salvaging the mother and the foetus.

This is a descriptive study and is the first in our centre on this subject. It provides the basis for further studies. Even though some important key issues were evaluated such as the incidence, risk factors and complications, it has not evaluated the strength of these risk factors and has not evaluated other risk factors such as socioeconomic status and educational status of patients. These factors and others should be studied in a comprehensive prospective study in the future which will provide more qualitative data that can be used to plan better preventive strategies.

CONCLUSIONS

Uterine rupture remains an obstetrics tragedy. The incidence in our centre is high even though it is comparable to that in other developing countries. The risk factors include high parity, booking status, presence of scar on the uterus, exposure to oxytocin and these are the same as those seen in other studies. The complications include maternal and foetal mortality, wound sepsis, wound dehiscence anaemia and vesicovaginal fistula. Reducing the incidence will require improvement in socioeconomic status, provision of quality antepartum and intrapartum care, encouraging hospital delivery and making peripheral hospital to refer their patients early before labour becomes complicated.

REFERENCES

1. Cunningham FG, Gant NF, Leveno KJ, et al. Rupture of the uterus in: William's Obstetrics 21st Ed. New York, NY: McGraw-Hill; 2001. 646-52.
2. C O Fofie and P Baffoe. A two year review of uterine rupture in a regional hospital. Ghana Medical Journal. 2010; 44(3): 98-102.
3. Kelsey A Harrison. Maternal Mortality in Nigeria: The Past, The Present and The Future. Lecture Delivered at Sheraton Hotels and towers Abuja. Organised by, Women's Health and Action Research Centre, 25th August 2009.
4. Federal Office of Statistics (FOS) 2000 and Demographic Health Survey (DHS) 2003.
5. JB Wilson/AT Lassey. Maternal Mortality In The Tropics In. E. Yao Kwawukume, E. Ejiro Emuveyan, eds. Comprehensive Obstetrics in The Tropics. Accra: Graphic Packaging Limited; 2005. P. 243-249.
6. Gardiel F, Daly S, Turner MJ. Uterine rupture in pregnancy reviewed. Eur J Obstet Gynaecol, Repro Biol, 1994;56(2):107-10.
7. Randle- Short CW. Rupture of the gravid uterus in Uganda. Am J Obstet Gynaecol 76(6) 114-1120, 1960.
8. Kadowa I. Ruptured uterus in rural Uganda: Prevalence, predisposing factors and outcomes. Singapore Med J 2010; 51(1).
9. Amanael Gessessew, Mengiste M Melese. Ruptured uterus eight year retrospective analysis of causes and management outcome in Adigrat hospital Region, Ethiopia. Ethiop J Health Dev 2002;16(3):241-245.
10. Adamassu A. Analysis of ruptured uterus in Debre Markos Hospital, Ethiopia. East Afr Med J 2004;81(1):52-5.
11. Adanu RMK, Obed SA. Ruptured uterus. A seven year review of cases from Accra, Ghana J Obstet-Gynaecol Can. 2003;25(3):225-230.
12. Ministry of Health. Ghana Health Sector Annual programme of work 2004 Accra: Ministry of Health; 2004.
13. Adesiyun A G, Zayyan MS, Ameh C A. Ruptured uterus in a tropical hospital: Choice of surgical treatment versus maternal outcome. J Turkish German Gynaecol Assoc 2008;9(3):144-148.
14. Aboyeji AP, Ijaiya MD, Yahaya UR. Ruptured uterus: A study of 100 consecutive cases in Ilorin, Nigeria. J Obstet Gynaecol Res 2001;27(6):341-8.
15. Ekanem EI, Etuk SJ, Ekott MI, Ekabua JE, Iklaki C: Sociodemographic profile and presentation of patients with ruptured gravid uterus in Calabar Nigeria. Niger J Med 2008;17(1):78-82.
16. Saglamtus M, Vicdan K, Yalcin H, Yilmaz Z. Rupture of the uterus. Int J Gynaecol Obstet 1995; 49(1):9-15.
17. Diallo FB, Idi N, Vangeenderhuysen, et al uterine rupture at Niamey Central Maternity Reference Niger. Dakar Med 1998; 43(1):74-8.
18. Iloki LH, Okongo D, Ekoundzola JR. Utrine rupture in an African environment. J Gynaecol Obstet Biol Reprod 1994; 23(8):922-5.
19. Khan S, Parveen Z, Begum S, Alam I. Uterine rupture: a review of 34 cases at Ayub Teaching Hospital Abbottabad. J Ayub Med Coll Abbottabad 2003; 15(4):50-2.
20. Okonta PI, Igberase GO. A Comparison of booked and unbooked patients with ruptured uterus in a referral hospital in the Niger Delta. Niger J Med 2007; 16(2):129-32.
21. Mishra SK, Morris N, Uprety DK. Uterine rupture: Preventable Obstetric tragedies? Aust NZ J Obstet Gynaecol 2006; 46(6):541-5.
22. Khanam RA, Khatun M. Ruptured uterus an ongoing tragedy of motherhood. Bangladesh Med Res Counc Bull 2001; 27(2):43-7.
23. Zadeh SM, El-Jallad MF, Sunna El. Obstetric uterine rupture: a four year clinical analysis. Gynaecol Obstet Invest 1999; 48(3)17-8.
24. Dattijo LM, Umar NI, Yusuf BM. Ruptured uterus in Azare North Eastern Nigeria. Jos Journal of Medicine vol. 5, No. 2, January 2011.