Original Article

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A Retrospective Observational Study of Bilateral Internal Iliac Ligation (BIAL) as a Therapeutic Measure in Severe Obstetric Hemorrhage at a Tertiary Care Centre in North Maharashtra

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Abstract

Background: Obstetric hemorrhage is major cause of maternal mortality worldwide. In India obstetric hemorrhage constitutes 38% of maternal deaths. BIAL is advocated as effective means of controlling severe obstetric hemorrhagepreventing maternal mortality and morbidity. *Aims:* To study effectiveness and outcome of BIAL IN severe obstetric hemorrhage as therapeutic measure. *Setting & Design*: The present study is carried out Dept of obs/gynae, Govt medical college. It is a retrospective observational study done among patients who have undergone BIAL as therapeutic measure to control severe obstetric hemorrhage. *Methods*: The study was conducted from January 2011 to January 2016. universal sampling done. Data of 25 patients collected in prestructured questionnaire, collected data analysed using MS Excel software. *Statistical Analysis:* Frequency analysis done for study variables. *Results:* During this 5 yr period BIAL was done in 25 patients. 40 % of the patients were from the age group of 25-29 yrs,36% patients were primipara and 28% patients were grand multipara. In Maximum no of patients BIAL was done patients for atonic PPH (32%), followed by for rupture uterus (20%). The effectiveness of BIAL was 92% & uterus conservation was 72%,with no major complication encountered. *Conclusion*: Early & prompt decision of BIAL in severe obstetric hemorrhage is very effective as therapeutic measure to save life as well as to preserve fertility of the patients.

Keywords: BIAL; Severe Obstetric Haemorrhage; North Maharashtra.

Introduction

Obstetric hemorrhage is major cause of maternal mortality worldwide.It is responsible for 125000 maternal deaths in each year and associated with morbidity in 20 millions women per year [1]. In India obstetric hemorrhage constitutes 38% 0f maternal deaths [7].Postpartum hemorrhage is associated with chronic morbidities such as chronic anemia,renal failure,general debility [2].In Obstetric hemorrhage, especially in PPH 80% of the cases are due to uterine atony [1].Other causes includes retained products of conception,lower genital tract laceration,placental abruption,placenta previa,prolonged labor and uterine rupture.but PPH can occur in any parturient unpredictably.The mortality and morbidity related with obstetric hemorrhage can be prevented with timely surgical interventions.BIAL is advocated as effective means of controlling severe obstetric hemorrhagepreventing maternal mortality and morbidity [3].BIAL reduces pelvic blood flow by 49% and venous pressure by 84% resulting in venous pressure in arterial circuits which promotes hemostasis[3]. The success rate of BIAL Varies from 40 to 100 % [4]. BIAL is safe,rapid and very effective method of controlling obstetric hemorrhageeven in most catastrophic situation .It is rapid alternative to hysterectomy in women wishing to preserve their reproductive potential and useful to prevent high surgical and anesthetic risk in already compromised patients.Moreover it is the only answer as therapeutic measure in massive broad ligament hematomas ,in torn vessels retracted within broad ligament and even in postoperative hemorrhage after obstetric

hysterectomy when no definitive bleeding point is detectable [5]. BIAL is thought to be technically difficult and surgeons often hesitate to perform this but actually BIAL has minimum operative complications and short learning curve [6]. The purpose of this study is to observe the benefits of BIAL in severe obstetric hemorrhage as therapeutic measure to save the life of mother as well as to preserve her fertility.

Methodology

The study is retrospective observational study carried out from January 2011 to January 2016 after approval obtained from ethical committee of the college. It was conducted in the department of OBGY ,Government medical college, Dhule (Maharashtra state). In this study Universal sampling done 25 cases of BIAL done to control excessive obstetric hemorrhage during study period were taken for the study. Obstetrical and demographic characteristics of the patients including age parity, gravidity, mode of deliveries, causes of obstetric hemorrhage, no of blood and blood products transfused,need for ICU management, hospital stay, outcome related to complications, fertility preservation and mortality were recorded using prestructured questionnaire to see the effectiveness of the procedure. Data collected analysed using MS Excel 10.0, frequency analysis done for study variables.

Results

Over 5 year period from January 2011 to January 2016 total no of deliveries conducted were 47511.Out of these deliveries 17580 deliveries were conducted in our unit in department of obstetrics and gynecology, Government medical college, Dhule. During this period we have performed total 25 cases of BIAL on patients of severe obstetrical hemorrhage as therapeutic measure.

40% patients studied were from age group25-29 (Figure 1). 9(36%) patients were primipara while 07(28%) patients were para 4 and above.The remaining patients were para-2(24%) and para-3(12%) respectively. In present study 12(48%) patients were delivered vaginally. Out of that around 3 (12%)patients had instrumental delivery and 9(36%) patients had full term vaginal delivery (Table 1). Total 5(20%) patients delivered at home and referred to hospital for severe PPH, 8(32%) had undergone LSCS operation. Regarding indications of BIAL, 8(32%) patients had atonic PPH, 05(20%) of the patients presented with rupture uterus, 03(12%) had traumatic vaginal delivery, 03(12%) patients had placental implantation defects, 02(8%) patients had abruption, 01(4%) patient had undergone BIAL for diffuse bleeding from pelvic sidewalls while 02(8%) patients undergone BIAL after obstetrical hysterectomy (Table 2). In our study along with BIAL 28% patients had undergone obstetrical hysterectomy, 36% patients had undergone B'Lynch, in 4% patients each uterine and ovarian artery ligation done in 28% patients. Only BIAL was performed. In 18(72%) patients (Table 3). Inspite of doing above surgical interventions BIAL was found to be effective to control the obstetrical hemorrhage . In our study out of 25 patients of BIAL, 18(72%) patients required blood / blood product transfusion, 7(28%) undergone obstetrical hysterectomy, in 18(72%) patients we could preserve future fertility, 6 (64%) patients needed ICU management. 2 (8%) patients died due to DIC and multiorgan failure.We could save 23(92%) patients life by doing BIAL (Figure 2).

Table 1: Distribution of cases according to mode of delivery

Mode of Delivery	No of Cases N=25
Full term vaginal hosp delivery	09(36%)
Instrumental delivery	03(12%)
Home delivery	05(20%)
LSCS	08(32%)

Table 2: Distribution of cases according to Indication of BIAL

Indication of Bial	N=25
Traumatic vaginal delivery	03 (12%)
Atonic PPH	08(32%)
Rupture uterus	05(20%)
Abnormal placental implantation	03(12%)
abruptioplacentae	02(08%)
Broad ligament hematoma	01(4%)
Diffuse bleeding from pelvic sidewalls	01(4%)
After obstetrical hysterectomy	02(8%)

Table 3: Distribution of cases according to other associated Procedures

Other Procedures	n=25
Obstetrical hysterectomy	07(28%)
Uterine artery ligation	01(4%)
Ovarian artery ligation	01(4%)
B'lynch suture	09(36%)
Only BIAL	07(28%)

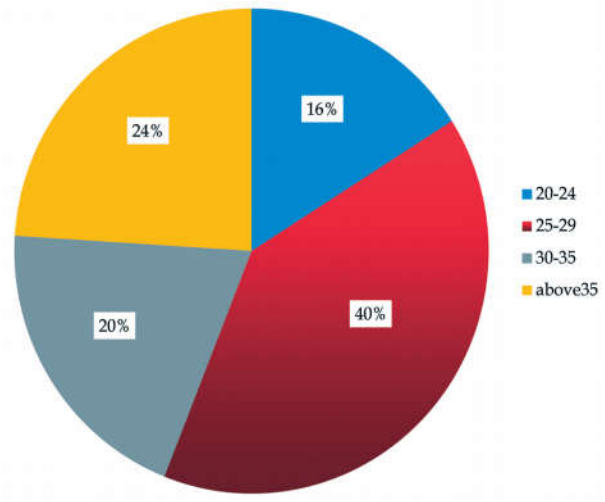

Fig. 1: Age wise distribution of study cases

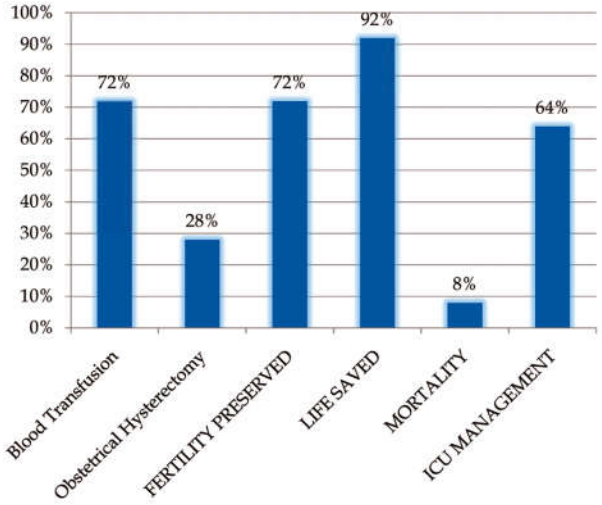

Fig. 2: Outcome of BIAL

Discussion

Maternal mortality is 10 to 100 fold higher in the developing world as compare to developed countries [8]. Obstetric hemorrhage is the most common single direct cause of maternal mortality, Almost 27% or more maternal deaths occur as a result of this factor alone [8] & this is the most common, single preventable factor [8]. BIAL is method to control pelvic hemorrhage and seen to be very effective in saving the lives of woman in severe obstetric hemorrhage. It also plays vital role in preserving the fertility of woman which has great impact on social life of a woman especially of third world countries [1,9]. In our study, most of the patients were in the age group of 25-29, this is comparable with the study conducted by Abid R et al, In this study it was found to be 27 year average age of the patients [10]. As per Yavuz Simsek et al, average age was 32 [11]. In present study 36 % patients were primipara while 28% patients were grand multipara.In study by Abid R et al, 16% patients were primigravida while 75% patients were from para 1 to para-4 [10], In Yavuz Simsek's study, the mean parity was 2 (0-4) [11],

In present study, the commonest cause of obstetric hemorrhage was atonic PPH which accounted for 32% of the total patients.This was corresponding with the figures of study conducted in Turkey in 2012 [10,12]. Also our finding was comparable with a study conducted by Abid R et al at Rawalpindi [10], in that study uterine atony was the commonest cause of PPH i.e. 5(41.6%) [10]. This is also comparable with other international studies that uterine atony has found to be the commonest cause of PPH [1,13].

According to study of the hemodynamics of the pelvic cavity by Burchell, it was seen that after BIAL the pelvic blood flow reduced by 49% and venous pressure by 85%this mechanism responsible for controlling hemorrhage [3]. In our study,because of same mechanism of BIAL uterus preservation was possible.Also as per the international statistics uterus preservation was possible up to 42 to 100 % of the patients [3]. In the study by Rubida et al overall uterus preservation was possible up to 42% [10]. Overall success rate of the BIAL as a life saving procedure was 92%, in study conducted by Dr Abha singh et al the effectiveness of the procedure was around 96.87% [14] in study conducted by Rubida et al it was 84% [10]. In study conducted by Yavuz SIMSEK et al who found it to be 84.7% [11] According to Patil et al 93%[15]. As per Naithani et al the success rate was 95.83% [16]. As per domingo et al the success rate was 81% [17]. As per J turkish society of obst and gynec society, overall efficacy was 84.7% [18]. Unal et al 87.9% [12], Chelli et al 82.45% [19]. Ligation of internal iliac artery was first performed by Kelly with success rate of 95% [20]. Mukherjee et al performed 36 cases of BIAL with success rate of 83.3% in 6 years

[21].

We did not encounter any procedure related major complication like major vessel and ureteric injury, similarly Dr Abha singh et al also not reported any complication [14]. Also no such complication were noted in other studies [6,15,22-25]. Gandhi et al reported a case of accidental injury to internal iliac vein [26]. Mehmet et al have reported one case of ureter ligation and one case of external iliac vein laceration during IIAL [27]. Also Dr Mona Gamit et al reported one case of superficial injury to internal iliac vein which was repaired by vascular surgeon [28]. Partha Mukhopadhyay et al found no major complications of the procedure [29].

In our study two patients died. One patient was referred from very remote area with rupture uterus in hypovolumic shock. BIAL done with Obstetric Hemorrhage but not survived. She died due to DIC and multiorgan failure. Second patient referred from private clinic from near taluka place. She was G3P2L2 with previous 2 LSCS with 32 wks of gestation with eclampsia with HELLP syndrome with severe intraoperative hemorrhage. Obstetric Hemorrhage with BIAL done in emergency but could not survived.

Almost 72% patients required blood and blood products transfusion. 64% patients requires ICU management and average hospital stay was around 2 weeks. Need of Blood transfusion and ICU ventilator support is directly proportional to time interval between onset of hemorrhage and BIAL. Kalburgi et al [6], Abha singh et al [14] found similar results while Joshi et al found that time interval between onset of hemorrhage due to uterine atony and IAL influence the uterine salvage rate [1].

Conclusion

Present study proves that BIAL is very safe, effective, rapid method of controlling severe obstetric hemorrhage. It is also effective in fertility preserving and sometimes only available life saving procedure for combating obstetric hemorrhage. It has been observed that this procedure is having minimal or almost no major complication rate. It has short learning curve.

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