

Air Transfer of Obstetric Emergencies to a Tertiary Care Center in Nepal

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Aims: This study was performed to review the places, indications, maternal-perinatal outcomes requiring emergency air transfer to a tertiary level referral center.

Methods: A hospital based descriptive study of one year duration, conducted in Tribhuvan University Teaching Hospital (TUTH), over a period of twelve months. All the women who were air transferred for pregnancy complications were enrolled.

Results: There were total 19 airlifted obstetric emergencies to TUTH over one year period: majority (68%) from hilly areas and others (32%) from mountain region. Out of them, referred cases were 11 [district hospital (5), healthpost (4); Primary Health Center (PHC) (2)]; and rest were from home (8). Two cases were abortion related; septic abortion (1) and incomplete abortion (1). There were three antepartum cases: pregnancy with meningoencephalitis (1), eclampsia (1) and bleeding placenta previa (1); maximum, eleven intrapartum cases, obstructed labor (6), labor dystocia (3), breech in labor (1) and undelivered second twin (1). Rest three were postpartum cases, one each of eclampsia, puerperal sepsis and retained placenta. Maternal morbidities were one each case of uterine rupture, acute kidney injury, retained placenta with PPH and vesicovaginal fistula that developed in the case of shoulder dystocia. Maternal mortality occurred in 2 cases, first women with antepartum eclampsia who had intracerebral bleed and second was a case of pregnancy with meningoencephalitis who later developed brain death. Regarding perinatal outcome 12/14 (86%) had live birth and 2/14 (14%) had IUFD upon arrival.

Conclusions: Air lift on personal expenditure, despite economic constraints has proven beneficial in our country's context with difficult geographical terrain and inadequate health services, whereas anticipation of any critical condition right in the beginning and timely transfer however could have been more advantageous.

Keywords: airlift; obstetric emergencies.

INTRODUCTION

Nepal has tremendous geographic diversity, ranging as low as 59 meters elevation in the tropical Terai to 90 peaks over 7,000 meters, including Earth's highest 8,848 meters Mount Everest. Nepal is topographically divided into three regions: the Himalayas to the north, the hills consisting of the Mahabharat range and the Chure Hills, and the Terai to the south. Annual Health Report of GoN 2070/71 inscribes that, there are as many as 1726 birthing and EmOC centers distributed over the five developmental regions. CEmOC services which includes the facility of caesarean section are currently provided in 56 districts.¹In Nepal access to health services even if available is complicated by difficult terrain, non-existent or poor condition of roads, unavailable transport facilities, unavailable skilled manpower thus women are seldom airlifted despite the cost factor to TU teaching hospital. The

benefit of appropriate medical transportation by air has been proven by numerous studies throughout the world, especially as regards of achieving appropriate timely medical intervention.^{2,3} Therefore the present study was carried out to review the places, indications, maternal-perinatal outcomes of women requiring emergency air transfer to TU Teaching Hospital.

METHODS

It is a prospective descriptive study conducted in Department of Obstetrics and Gynecology TUTH for one year duration in 2072 BS (since 14th April 2015), during which all the airlifted obstetric emergencies were enrolled. Permission from the Department of Obstetrics and Gynecology was taken before starting the study. Patients were explained about the purpose of the study and were included after taking informed consent. The places, indications requiring emergency air transfer to a tertiary level referral center were studied. Management of the patient, mode of delivery, maternal and perinatal outcomes were noted, women and babies were followed up until discharge. All collected data was filled in a predefined proforma. Data were analyzed using SPSS version 20.

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RESULTS

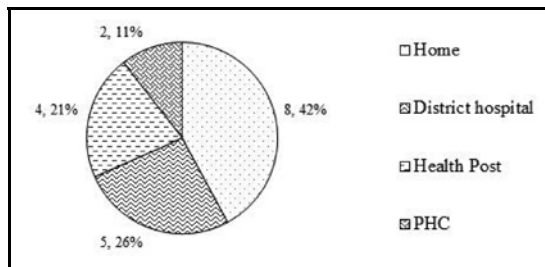
A total of 19 obstetric emergencies were airlifted to TU teaching hospital during the twelve months period. It accounted 0.3%(14/3911) of total deliveries in a year. Age of the women ranged from 17-43 years (mean 25.6 years). Parity ranged from 0-8 with (mean 1.68). The mean gestational age of women delivering was 38 weeks±2.3SD.

Majority women were airlifted from hilly areas 68% [Khotang (6), Gorkha (4), Dhading (2), Bhojpur (1)] and from mountain region 32% [(Solukhumbu (3), Rasuwa (1), Sindhupalchowk (1) Sankhuwasabha (1)] (Figure 1). Eight (42%) cases were airlifted directly from their home while others were referred from health care centers (58%); district hospital 5 (26%), health post 4 (21%) and 2 (11%) cases from primary health care center (PHC) (Figure 2).

Figure 1: Map of Nepal showing regions and districts of Nepal from where women were airlifted

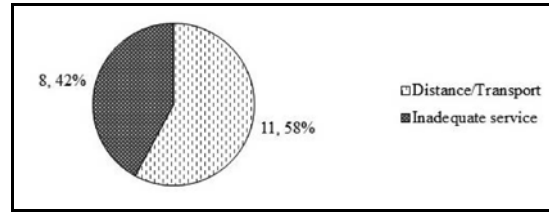


Figure 2: Sources of transfer



Eleven (58%) of obstetric emergencies were air transferred due to difficult roads, far distance and unavailable transport and eight (42%) due to inadequate health services (Figure3).

Figure 3: Social determinants of transfer



Among the obstetric emergencies, two cases were abortion related; septic abortion with AKI (1) and incomplete abortion with anemia (1). There were three antepartum cases: pregnancy with meningoencephalitis (1), eclampsia (1) and bleeding placenta previa (1). Maximum, eleven intrapartum cases, obstructed labor 6: [with uterine rupture (1), shoulder dystocia with IUFD (1), cephalopelvic disproportion (4)]; others were footling breech in labor (1), undelivered second twin in transverse lie (1), labor dystocia (3). Rest three were postpartum cases, one each of eclampsia, puerperal sepsis and retained placenta (Figure 4).

Figure 4: Airlifted obstetric emergencies in tertiary care center

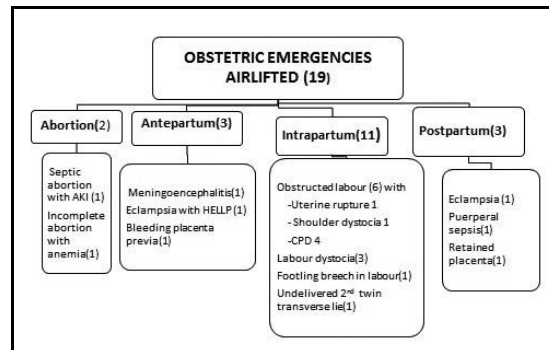
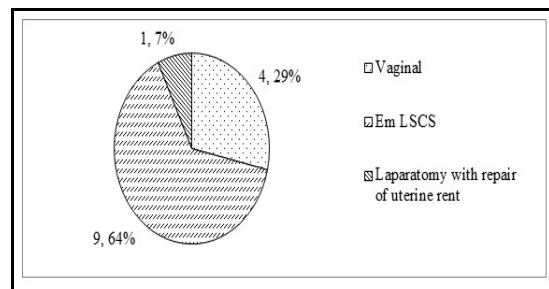


Figure 5: Mode of delivery

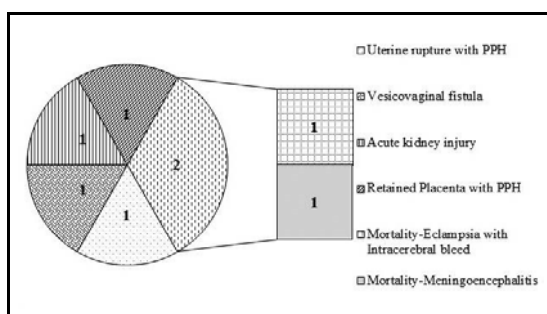


Majority nine (64%) [four cases of obstructed labor, one each case of antepartum eclampsia, footling breech, undelivered transverse second twin, bleeding

placenta previa, woman diagnosed with brain death] had EmLSCS, four (29%) [Three cases of labor dystocia, one case of shoulder dystocia with IUFD] had vaginal delivery and one case (7%) underwent emergency laparotomy with repair of uterine rupture (Figure 5).

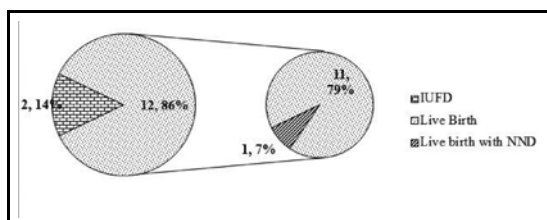
Maternal morbidities included uterine rupture(1), vesicovaginal fistula in a case of shoulder dystocia (1), acute kidney injury (1), retained placenta with PPH (1). Maternal mortality occurred in two cases, one in case of eclampsia with intracerebral bleed and second in case of pregnancy with meningococcal meningitis with brain death(Figure 6).

Figure 6: Severe maternal morbidities and mortalities



Majority of baby delivered were live birth, eleven (85%) and out of them one baby had early neonatal death (NND) due to meconium aspiration syndrome (MAS) .Two babies(15%)[One case of shoulder dystocia and one with uterine rupture] delivered were diagnosed IUFD on arrival (Figure 7).

Figure 6: Perinatal outcome



DISCUSSION

During the period of one year, there were total 19 airlifted obstetric emergencies. Majority were residents from hilly areas followed by mountainous region. Difficult terrain, inaccessibility to health care facilities and inadequate health services with urgency of situation were major social determinants for air transfer of these obstetric patients to TUTH. A study⁴ done in five remote districts of Nepal (Bajura, Rukum,

Gorkha, Rasuwa and Taplejung) on 'Access to MNCH services' showed that as the distance to health facility increased utilization to services decreased, 31% of people lived more than eight hours travel from their district hospitals. Furthermore, shortage of human resources, skilled personnel like doctors and staff absenteeism was found as a barrier for health services.

Majority air transfer done in TU teaching hospital was during the intrapartum period for labor abnormalities like obstructed/prolong labor. In developed countries in-utero air transfer of high risk obstetric cases were done to tertiary neonatal care center for better perinatal outcome.^{6,7,8} This indicates poor utilization and accessibility of EmOC services, as shown in form of very low caesarean section rate of 1.4% in mountain areas compared with 3.7% in the hills and 5.8% in the Terai.⁹

Morbidities related to obstructed labor such as uterine rupture, shoulder dystocia and late complication like VVF could have been prevented with proper antenatal care with identification of these high risk women and timely referral to accessible institutional deliveries where caesarean section facility was available. Similar preventive methods of identification and prompt transfer have been highlighted in a seven year review of cases of uterine rupture in a tertiary care hospital.¹⁰

Two cases of post abortion complication, one for sepsis with renal failure and other for incomplete abortion with bleeding with anemia were referred from district hospital due to unavailability of blood products. There was one woman airlifted on fifth day of home delivery with retained placenta with PPH due to inaccessibility of health care facility. These all indicate towards poorly functioning and inaccessible emergency obstetric care in the hilly and mountain areas of Nepal. A study done under National Safe Motherhood Project¹¹, in assessment of current EmOC services available in three districts (Baglung, Surkhet and Kailali) showed provision of safe blood and blood supply to be inadequate.

There were two maternal mortalities among the airlifted women to our center. First case was of woman who was transferred from district hospital with diagnosis of antepartum eclampsia with cardiac arrest post CPR, initially misdiagnosed as acid peptic disease and hence leading to delay in receiving care

and hence, delay in referral. At the time of arrival, she had developed HELLP syndrome. After cardiac evaluation and PRP transfusion, she underwent EmLSCS. Baby was born with poor Apgar score with meconium stained liquor and had NND at day1 of life. Mother developed intracerebral bleed and had maternal mortality on second postoperative day.

Second mortality was in a pregnant woman at 33 weeks with acute meningoencephalitis who presented to our center after loss of consciousness at home for 12 hrs. She was admitted in ICU under mechanical ventilator. Baby was delivered by Em LSCS at 34 week after she was diagnosed brain death, with good perinatal outcome. Mother was declared dead after withdrawal of life support. Both the maternal mortalities could have been prevented if there was no delay in receiving care and timely management. Nepal's Maternal Morbidity and Mortality Study¹² 2008/09 found that 80% of maternal death cases at health facilities were admitted in a critical state, with 18% dying within 4 hours, 39% within 12 hours and 53% within 24 hours of admission.

There were total of 11 live births including a baby of maternal brain death women who underwent EmLSCS at 34 weeks POG with good perinatal

outcome. One early NND was in eclamptic mother who also had maternal mortality. Two IUFD cases of uterine rupture and shoulder dystocia each could have been prevented if proper ANC care would have identified CPD and managed appropriately. Studies^{13,14} have shown that delay in health seeking and preference to home deliveries due to cost of transport and health service, lack of services at local health center, distance to health facility were contributors to maternal mortality and newborn deaths in developing countries.

CONCLUSION

In country like Nepal with difficult terrain and inadequate health services, airlifting on personal expenditure despite economic constraints has proven beneficial in saving the life of mother and baby. Availability of emergency obstetric services which are acceptable, timely accessible and functional would be more advantageous.

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