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Case Report

Autologous Blood Transfusion in Surgical Outreach Camp

Apurb Sharma*, Balkrishna Bhattarai**

*Shahid Gangalal National Heart Centre, Bansbari, Kathmandu, Nepal.

**BP Koirala Institute of Health Sciences, Dharan, Sunsari, Nepal

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Abstract

Poor access to healthcare including surgical care is one of the known problems faced by people living in the remote terrains of Nepal. Reaching to the community with the help of health camps has been exercised for many years in Nepal. However, surgery in such camps is often hindered by many obstacles including unavailability of blood products, lack of or poor storage facility for donated blood. Surgery often needs to be deferred in otherwise healthy patients with rare blood groups. Autologous blood collection with acute normovolaemic haemodilution is one of the blood sparing techniques used in cases where it is difficult to get matched blood or when allogenic blood cannot be used. We report a case of autologous blood collection and subsequent transfusion in a patient undergoing vaginal hysterectomy and pelvic floor repair performed at a surgical outreach camp organized in a remote district of Nepal.

Keywords: Autologous blood transfusion; Blood groups; Haemodilution; Nepal; Surgical outreach camp.

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Introduction

History of anaesthesia in Nepal dates back to 1933.¹ However, geographical remoteness and difficult terrain still prevent many Nepalese from access to minimal essential healthcare including anaesthesia and surgery. Health camps organized time to time by the governmental and non-governmental organizations are the only available option left for these marginalized people. Lack of or poor facility for blood collection and storage in such locations are among the few hindrances that often prevent simple surgeries from being accomplished in such camps. Individuals with rare blood groups add further to

the difficulty. Acute Normovolaemic Haemodilution (ANH) technique in support of surgery for individuals with rare blood groups has been previously described in general hospital setting.² However, its use, feasibility and safety have not been described in a surgical camp setting in geographically remote and difficult terrains. We describe a case with rare blood group that underwent vaginal hysterectomy (VH) with pelvic floor repair (PFR) and received autologous transfusion in a remote health camp setting using ANH.

Corresponding author:

Apurb Sharma

Department of Cardiac Anaesthesia,

Shahid Gangalal National Heart Centre, Bansbari, Kathmandu, Nepal.

Telephone: +9779841221467

Email: apurbsharma1976@gmail.com

Case Report

A forty year old mother of four children from Seduwa village, Sankhuwasabha District, was diagnosed to have third degree utero-vaginal prolapse and was planned for VH and PFR in a surgical camp at Khandbari, Sankhuwasabha. Her pre-anesthetic evaluation revealed a heart rate of 84 beats per min, blood pressure of 130/80 mm of Hg, weight of 55 Kg and no other systemic abnormalities except a third degree utero-vaginal prolapse. Her airway was normal; blood group was B negative and her haemoglobin level was 13.4 gm/dL, while other investigations were within normal limits. Blood products of B negative group were not available at around the camp area. Considering the geographical remoteness of the camp from any tertiary centre and her poor socio-economic status, it was decided to proceed with the surgery. Since her haemoglobin level was good and blood collection facility was locally available at the Red Cross Society office suite, ANH was planned to overcome the problem of non-availability of a suitable blood donor for her. The anaesthetic technique planned was subarachnoid block.

Before starting anaesthesia and surgery, approximately 500 ml of patient's blood was collected in two separate blood collection bags (250 ml in each) while simultaneously infusing the same volume of the colloid solution Haemacel® through a different peripheral vein. Haemodynamic parameters were carefully monitored during the procedure. VH with PFR was carried out under subarachnoid block using standard technique. Estimated blood loss was approximately 800 ml, otherwise the surgery was uneventful. The collected blood was transfused in the immediate post-operative period and post-transfusion hemoglobin was assessed which was 9.0 gm/dL. Post-operative analgesia was provided with non-steroidal anti-inflammatory drugs. Post-operative recovery was uneventful and the patient was discharged on the third post-operative day.

Discussion

Unavailability of matched blood still remains a major hindrance in undertaking surgery in individuals with rare blood groups. Various attempts have been made to overcome this hindrance including surgical blood loss minimizing techniques, blood conservation techniques and autologous blood transfusion.³ Autologous blood collection can be accomplished either using predeposition scheme or with ANH technique.⁴ Both of the autologous blood collection techniques require blood collection facility while the former requires a well functioning blood bank to store blood. Since our patient was planned for surgery in a surgical camp setting, predeposition scheme obviously went out of consideration.

Surgical outreach camps are carried out mostly in the district hospital or similar setting with possible access to blood banks with limited facilities like blood collection

and viral marker screening. Generally, these are mobile blood banks, in which donors are selected from previously identified list of blood donors and are made to donate blood only when it is required. Since our patient had a relatively rare blood group type no suitable donor was available. The only option left to us for arranging blood was ANH which we considered feasible in our case as her preoperative haemoglobin level was more than 13 gm/dL. Any patient with a haemoglobin level of at least 10.0 gm/dL can be considered a candidate for ANH.⁵

As described in our case, ANH involves the removal of a calculated portion of a patient's circulating blood volume just prior to surgery, with haemodynamic stability maintained by the simultaneous infusion of cell-free fluid (e.g. crystalloid and/or colloid solutions).⁵ The harvested blood is placed in sequentially numbered bags, labelled and stored at room temperature to preserve platelet function and then re-infused.⁶ This technique provides a readily available source of fresh autologous blood components and clotting factors when needed, but the correction of the loss of hemoglobin is likely to be small, represented by the difference in haematocrit between the shed and re-infused blood.⁷

Autologous transfusion strategy is being adopted increasingly as an alternative to allogenic blood transfusion in support of elective surgery. This trend is largely due to the apprehension regarding transfusion-associated infections, especially since the epidemic of human immunodeficiency virus.⁸ Most published studies on autologous transfusion have been focused on patients who undergo major orthopaedic, cardiac or urological surgical procedures carried out in advanced hospital setting.^{9,10} Use of autologous transfusion in general hospital setting has also been described in gynecological procedures.¹ However, no such reports are available of its use in surgical outreach camp setting of remote difficult terrain. Patient safety is a major concern both for the care giver and the service users in such surgical camp setting.¹¹ Blood transfusion is a frequently required procedure in support of gynecological repair procedures.² It undoubtedly needs to be extremely safe more-so-ever in such a camp setting. From an anaesthesiologist's point of view, safety of the patient outweighs any other issues in remote locations where the standard of care can not differ from that offered in any operating room. Anticipating the possibility of significant blood loss, ANH was opted in this case rather than going on with the surgery without any blood products in hand.

In conclusion, this case has shown a possibility of autologous transfusion with ANH in patients with rare blood groups in remote surgical outreach camp setting. Further observations with significant number of patients are required to ascertain if it could be a viable strategy for patients with rare blood groups in surgical outreach camps in remote difficult terrain.

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