“Hemostasis in Placenta Accreta Spectrum: Is the internal manual aortic compression enough?”

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LETTER TO THE EDITORS

TITLE – “Hemostasis in Placenta Accreta Spectrum: Is the internal manual aortic compression enough?”

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Conflict of Interest statement – Prof. VP Paily intends to obtain a patent for the “Paily Common Iliac/Aorta clamp”.

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Dear Editor,

We appreciate the recent recognition that the Internal Manual Aortic Compression (IMAC) technique received as an emergency hemostatic maneuver in Placenta Accreta Spectrum (PAS) procedures – due to the work of Nieto-Calvache and Palacios-Jaraquemada et al. 2022. However, IMAC remains a temporary intra-operative measure – intended to limit blood loss until more definitive hemostatic measures are in place. Resource-constrained centers that often encounter PAS unexpectedly - cannot deploy expensive techniques such as Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) or cell-salvage systems. The lack of vascular surgeons limits the prospects for a retroperitoneal dissection needed for aortic cross-clamping.

During IMAC, the low transverse abdominal incision typically used in obstetric laparotomies may not allow adequate access for the surgeon’s hand to reach cranial to the aortic bifurcation. In addition, IMAC needs a dedicated operator to apply significant and sustained pressure over a large segment of the thick-walled abdominal aorta until definitive measures are in place – likely to be increasingly ineffective as the operator tires out. Furthermore, during IMAC, bladder/pelvic dissection will be tedious as the uterus is pushed caudally, and accessing the placental - bladder area will be difficult.

We propose a simple solution – a purpose-designed clamp that occludes the aorta without retroperitoneal dissection. The Paily Aorta Clamp (PAC) can be easily applied just above the aortic bifurcation (or on the common iliac arteries if needed) when unexpected uterine/parametrial hemorrhage is noted intraoperatively (Figure 1). Then, the PAC can be left clamped in-situ to provide a bloodless operative field for bladder/pelvic dissection, just as in elective procedures. Video demonstration of the clamp application can be found at Paily et al. 2022. PAC effectively limits the massive blood loss associated with PAS procedures –
similar to aortic cross-clamping and REBOA. However, PAC is potentially safer than aortic
cross-clamping/REBOA with no incidence of vessel injury, thromboembolic phenomenon, or
reperfusion injury in 158 procedures performed across seven centers in India over the past
decade4.

In the event of unexpected obstetric hemorrhage due to PAS, we recommend that the operator
immediately use the IMAC technique to occlude the aorta while the assistant applies the PAC
within seconds. If the aorta is difficult to reach, a pair of the same clamps can be applied on
the common iliac arteries, achieving temporary pelvic devascularization. We believe these
techniques working complementary to each other, can hasten hemostasis safely and avoid
hemorrhage-associated maternal morbidity/mortality.

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Legend
Figure 1. A model of pelvis demonstrating the Paily Aorta Clamp applied over the abdominal aorta. [A] Babcock Forceps used to gently lift up the aorta. [B] Paily Aorta Clamp taking the full thickness of the aorta.