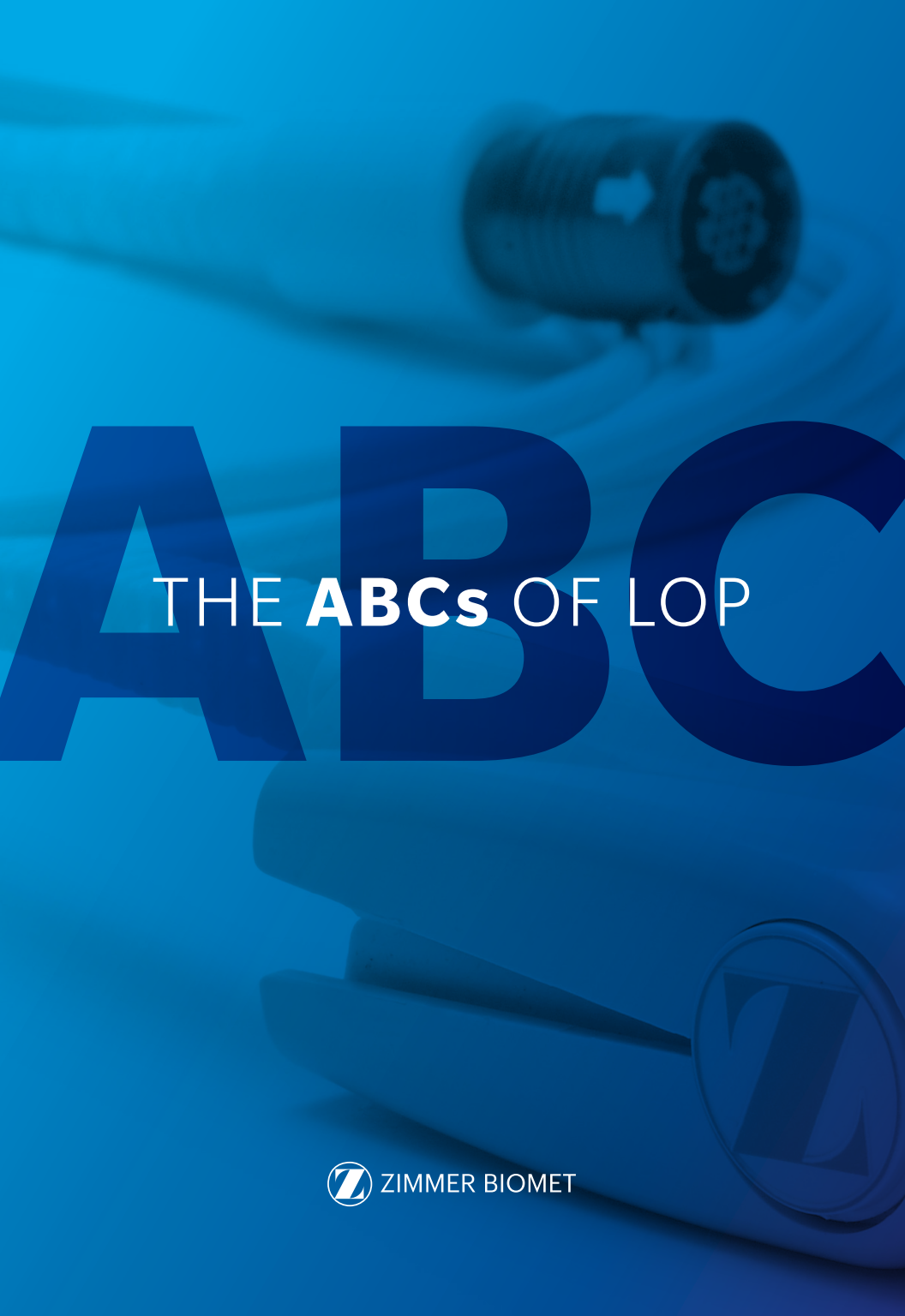
ABC
THE ABCs OF LOP
ZIMMER BIOMET

Have any of your patients complained of post-operative tourniquet pain or transient nerve pain? If so, are you using a standard 300 mm Hg for thigh pressures & 250 mm Hg for upper arm?

Make no mistake; Limb Occlusion Pressure (LOP) is not just any pressure that stops blood flow to the limb as the competition may want to portray. We know that patients all have different systolic blood pressure, limb shape & circumference – so why would we want to use unnecessarily high tourniquet pressure on all of your patients?

The Zimmer Biomet A.T.S.® 4000 measures the minimum cuff pressure to stop arterial blood flow and reports this back to the healthcare professional. Concurrently, it also displays the Recommended Tourniquet Pressure (RTP) for that specific patient, which accounts for any fluctuations in blood pressure throughout the case.

Let's discuss the ABCs of LOP

A IS FOR “ABSOLUTE MINIMUM”

B IS FOR “BLOODLESS FIELD”

C IS FOR “CONFIDENCE”

Absolute Minimum

The true definition of LOP as defined by McEwen *et al*, is the minimum cuff pressure that stops arterial blood flow distal to the cuff.[6] This definition is recently well supported by Tuncali *et al*, as being called arterial occlusion pressure (AOP).[4] The term AOP and LOP are synonyms. Using the minimum effective pressure (i.e. LOP) added to a pressure margin has been shown to allow the use of lower tourniquet cuff pressures when compared to recommended standards without affecting limb hemostasis.[2]

Bloodless Field

It has been well reported and studied that high tourniquet pressure can cause injury to the tissue under and near the tourniquet cuff, nerve damage, and could cause weakening, partial or complete muscle paralysis.[1,2,7] Tourniquet cuff pressures that are too low could result in bleeding distal to the cuff which can result in undesirable blood in the surgical field and blood loss. Insufficient tourniquet cuff pressures have been reported to impair venous return while allowing arterial blood flow to continue.[3] Hence, setting tourniquet pressures too low can cause pooling of blood in the field.

Confidence

Researchers have shown that using a Doppler stethoscope (the gold standard) in the determination of the minimum effective tourniquet pressure to be quite useful and effective.[5] A similar study concluded that there was no significant difference between the LOP obtained by the plethysmograph-equipped tourniquet system [A.T.S.® 3000] and the LOP obtained with a Doppler stethoscope.[6] Moreover, the study found that using a standard width tourniquet cuff and using the plethysmograph technique to sense LOP and adding a pressure margin, the patient experiences tourniquet cuff pressure of 12 to 25% less when compared to current practice and tourniquet hemostasis was successfully obtained in 93% of the cases.[6] The A.T.S. 4000, similar to the A.T.S 3000, does this entire process in approximately 30 seconds. Reid *et al*, showed that the LOP plus a pressure margin gave good hemostasis in 93.2% of the upper extremity procedures and 97.5% in lower extremity procedures.[2] The A.T.S. 4000 reports the LOP and RTP and gives the healthcare professional an option in setting the tourniquet cuff pressures.

With the minimal time required, ease of use and well documented benefits of lower tourniquet pressures, the A.T.S. 4000 Automatic Tourniquet System offers the healthcare professional an option in setting the tourniquet cuff pressures while always keeping the final setting of pressure in the healthcare professional's hands. Minimizing tourniquet pressure and pressure gradients with LOP helps minimize the risk of post-op tourniquet pain and nerve-related tourniquet injuries.[8]

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1389.1-US-en-REV0417