The effectiveness of modified seton and modified combat gauze in controlling severe hemorrhaging during operations of uniformed services

Z. Adamiak¹, D. Bukowiecka², P. Jastrzębski², M. Jałyński¹, P. Holak¹, J. Głodek¹, G. Gudzbeler²

¹ University of Warmia and Mazury, Faculty of Veterinary Medicine, Department of Surgery and Radiology, Oczapowskiego 14, 10-957 Olsztyn, Poland
² Police Academy in Szczyno, Marszałka Józefa Piłsudskiego 111, 12-100 Szczyno, Poland

Abstract

Hemorrhaging from large vessels poses a serious problem in emergency situations when blood loss needs to be immediately controlled. The aim of the study was to compare the effectiveness of two hemostatic dressings in controlling bleeding from a surgically punctured femoral artery. The study was performed on thirteen pigs divided into two groups, of six and seven pigs, respectively. Combat gauze covered with ChitoClear hqg 95 chitosan and Protanal LF10/60 FT sodium alginate was used in the first group, seton covered with identical substances was uses in the second group. Selected hemostatic dressing was applied to the wound 20 seconds after incision and then removed at regular time intervals to evaluate hemostasis. Modified seton was characterized by a shorter time to hemostasis than combat gauze. The result of this experiment indicate that modified seton proved to be a more effective dressing than modified combat gauze.

Key words: hemorrhage, hemostatic dressing, combat gauze, pig

Introduction

Hemorrhaging, in particular severe bleeding from large vessels, requires immediate medical attention due to a high risk of mortality (Jastrzębski et al. 2014). Wounds of that type are often encountered during operations of the uniformed services who perform their duties in health- and life-threatening situations (Cox et al. 2009). The most common type of injuries in the special services are gun-shot wounds, followed by incisions and stab wounds. The extent and depth of the wound is determined by the type and severity of an injury as well as the part of the body exposed to damaging effects of a bullet, ricochet, shrapnel or a sharp tool. Traffic accidents and surgical interventions may also lead to hemorrhaging. Hemostatic dressings are effective in controlling profuse bleeding (Shina et al. 2015). They are used to suppress external