

ABSTRACT 08

To Mend Broken Wounds in the Midst of Genocide

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Objectives: Gaza is the graveyard for children, and it is estimated that over 100,000 surviving children will be amputees and need care throughout their entire lives. The carnage of the ongoing war has created the biggest cohort of pediatric amputees in the world. During World War I, hydrolysed collagen, known as gelatin was used as a substitute for intravenous blood-boosting plasma solution to treat the wounded and saved thousands of lives. Collagen is a major protein in rebuilding tissues and its use in tissue engineering and regenerative medicine is widely known. However, access to this biomaterial is limited due to its high cost and financial constrain, sanctions, and war. The study aims to optimize the methods and conditions for on-site production of collagen scaffold from bovine tendons for use in the emergency treatment of wounded patients. **Methods:** The collagen used in this work was extracted from a fresh bovine tendon and purified accordingly before the fabrication using a freeze-drying technique. Produced collagen scaffolds were then subjected to sterilization using UV and ultracold storage to ensure that the material will be safe for use after the fabrication process. **Results:** Our engineering and research team in IIUM had successfully developed a process for the production of collagen scaffold in our facility. The fabrication and freeze-drying processes formed a scaffold that is stable and easy to store and transport without the need for cold storage while maintaining its bioactivity. Sterility test showed that the storage in ultracold freezer was enough to inactivate microorganisms, without the need for UV sterilization. **Conclusion:** This effort would be beneficial to the healthcare providers to treat the injured in Gaza.

Keywords: Genocide, wound healing, collagen scaffold, tissue engineering, amputation

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