

Neophil long lasting hydrophilic PVDF ultrafiltration in GIGAMEM large modules: Benefits and case studies of Polymem large plants performances

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Abstract

Hollow fiber membranes, with a high packing density and an easy assembly in bundles and modules, are one of the most cost competitive solutions for water membrane filtration, re-use of wastewater, or prefiltration to reverse osmosis. Over the years, the investment and maintenance costs of such membrane systems have dramatically decreased and are now cost competitive with the conventional media filters. This was possible thanks to both module design evolution and associated process improvements. However, since the size of standard modules are today relatively small (from 4 to 12 inches), huge number of modules and huge number of associated connections, pipes and modules supports are necessary for the construction of large plants. It is a drawback for cost reduction which has reached a plateau. A way to start again costs saving, is to pass to larger pressurized module diameter. In this paper, a new and unique very large pressurized hollow fiber membranes module, developed recently by Polymem, is presented. The module, named Gigamem® UF240, with 600 mm diameter (24 inches) and 1.5 m height (60 inches), develops at least 540 m² of membrane filtration area. Wound management recommendations usually group dressings by base substrate material or reimbursement codes, even when functional differences are vast (e.g., honey-containing alginates, super-absorbent hydrogels). Polymeric membrane dressings (PMDs) diverge dramatically from conventional foam dressings in functional attributes, indications, and patient results, providing an opportunity to demonstrate the evidence for categorizing dressings based upon functional differences. A search of ALL published literature describing the use of PMDs, with no date or language limits, was conducted. Documents simply listing a PMD brand name (e.g., PolyMem) as one of many "foam" dressings were eliminated. The subset of evidence evaluating PMDs for tissue damage resulting from pressure (pressure ulcers, pressure injuries, henceforth: PUs) was summarized. Studies of PMDs, primarily from independent clinician-researchers, have accumulated into a significant evidence base over the past 30 years. PMDs actively cleanse and debride wounds, balance moisture, relieve pain, and limit inflammation: all functions not shared by conventional foams. These results strongly support the

author's assertion that evidence-based wound management requires guidelines and recommendations that categorize advanced dressings based upon how they function in real-life settings, rather than upon their base substrate. Laparoscopic approach is now generally accepted for the treatment of incisional hernia. The ideal mesh is still to be found. The aim of this study is to compare the well-known Gore® DUALMESH® Plus (WL Gore & Associates, Flagstaff, AZ) to a new prosthesis, the DynaMesh®-IPOM (FEG Textiltechnik GmbH, Aachen, Germany), to clinically verify its potential benefits in the laparoscopic treatment of incisional hernia. Comparing the results of the laparoscopic treatment of two groups of patients affected by incisional hernia using Gore® DUALMESH® Plus and DynaMesh®-IPOM. There were 45 females and 31 males, with age variable from 21 to 84 years of age. The two groups were well matched for age (median age 60 years for group A and 57.6 years for group B-p=0.44) and sex (28F and 17M group A and 13 F and 18 M group B-p=0.008), while median BMI resulted slightly higher in group B (26.12 group A and 29.74 group B-p=0.001). The median size of the defect was similar in the two groups (87.5 mm group A and 83.4 mm for group B-p=0.83), while the median operating time was slightly longer in group A (77 min group A and 67 min group B-p=0.44). No difference in the length of hospital stay was evidenced between the two groups (3.19 days for group A and 3 days for group B-p=0.74). Time to return to physical activity was similar between the two groups (13.46 days for group A and 12.7 days for group B-p=0.32). Minor complications occurred in 15 cases (19.7%): seromas (7 cases), prolonged ileus (6 cases), and hemoperitoneum (2 cases), without significant difference in the incidence of such complications in the two groups. Five recurrences (6.5% of cases) occurred. No differences in the recurrence rate was noted between the two groups (3 cases/7% for group A and 2 cases/6% for group B-p=0.007). DynaMesh®-IPOM proved to be a safe and effective mesh for the laparoscopic repair of incisional hernia even when compared to DUALMESH® Plus.

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