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Original Research Paper

Orthopaedic

EARLY RESULTS OF DERMABOND DRESSINGS IN OPERATED CASES OF TOTAL KNEE REPLACEMENT

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ABSTRACT

Background: Wound drainage after total knee replacement can be detrimental to surgical outcome.
Objective: To determine early results of Dermabond® dressings in operated cases of total knee replacement
Material And Methods: This observational study was conducted to examine the use of Dermabond® as an adjunct to wound closure after TKR. We proposed that Dermabond® supplementation to wound closure would result in a significant decrease in wound drainage and better wound healing after TKR. After carefully selection of patients with getting informed consent to be part of study, patients of age group 50 to 80 years of both genders patient had received Dermabond® supplementation postoperatively. Standardized dressings were evaluated postoperatively for wound healing, infection rate and timely healing and allergic reactions.
Results: Total 70 TKRs performed in 41 patients were included in the study. Out of the 41 patients 10 were males and 31 were females. Mean age of the patients was 67.5 years (SD= 4.5 Years). Out of 41 patients, 37 patients had osteoarthritis and 4 patients had rheumatoid arthritis. 14 patients had normal Body Mass Index, 17 patients were overweight and 10 patients were obese. In overweight and obese category majority were females. 48.8% patients had comorbidity, majority of them was either diabetes or hypertension or both. Standardized dressings were evaluated postoperatively for wound healing, infection rate and timely healing and allergic reactions. Mean length of hospital stay was 5.4 day (SD= 1.8 days) with one day prior admission. Postoperatively, in all patients drain was used for 24 hrs. Wound healing was normal in all the patients, only one patient had allergic reaction. Infection rate was nil. None of the patients had pain at the time of the removal of the dressing.
Conclusion: Dermabond® was found to be effective in wound healing in operated cases of total knee replacement.

KEYWORDS : Total Knee Replacement, Dermabond® Dressing, Wound Healing, Early Results

INTRODUCTION:

Wound closure and surgical preparation strongly influence rates of wound complications. At this time, there is no standard of care for postoperative knee dressings , and wound management after knee arthroplasty continues to be a challenge because of the unique demands on the healing incision. Several innovative wound dressings have been developed to address wound healing after surgery. Skin glue, such as 2-octyl cyanoacrylate adhesive [Dermabond®, Ethicon, Somerville, NJ] and n-butyl-2-cyanocacrylate adhesive [SwiftSet™, Covidien, Dublin, Ireland], has been used regularly to seal epidermal apposition and limit ingress or egress through a surgical wound. Aquacel Ag [AQUACEL® Ag SURGICAL cover dressing, ConvaTec, Berkshire, UK] is a silver-impregnated, occlusive, hydrofiber-based dressing that can protect a surgical wound for 7 days. Aquacel Ag has been shown in multiple studies to result in fewer wound infections and improved wound healing than traditional gauze-based dressings. Recently, 2-octyl cyanoacrylate adhesive has been combined with a polyester mesh [Dermabond® Prineo®, Ethicon] to reinforce and share tension across a surgical wound. The mesh dressing has been shown to decrease wound edge ischemia and improve cosmesis (1).

In theory, this is due to decreased tensile stresses on the wound apposition by load sharing with the mesh [2]. Wounds dressed with mesh have also shown decreased drainage compared with controls [3]. Importantly, wound drainage contributes to delayed wound healing, decreased patient satisfaction, increased cost, and increased risk of infection in knee arthroplasty procedures [4].

This study was carried out to determine early results of Dermabond® dressings in operated cases of total knee replacement.

METHODOLOGY:

This study was carried out in private hospital in Pune city of Maharashtra state of India,. This observational study was conducted to examine the use of Dermabond® as an adjunct to wound closure after TKR.

We proposed that Dermabond® supplementation to wound closure would result in a significant decrease in wound drainage and better wound healing after TKR. After carefully selection of patients with getting informed consent to be part of study, patients of age group 50 to 80 years of both genders patient had received Dermabond® supplementation postoperatively.

All patients were evaluated postoperatively for wound healing, infection rate and timely healing and allergic reactions.

Statistical Analysis:

Data was collected using a structured proforma on Excel software (Microsoft, Seattle, USA). Data was analysed by using statistical software Primer of Biostatistics. Measurements were expressed as means and standard deviations for continuous variables and percentages for categorical variables and was analysed.

Ethical Considerations:

The study was conducted according to the Declaration of

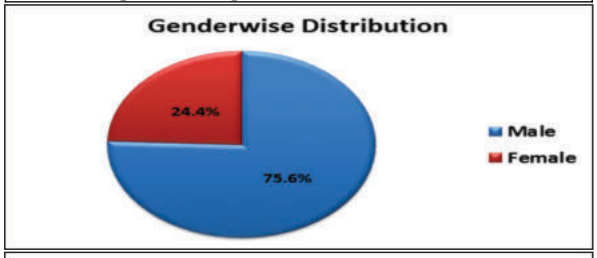
Helsinki.. A written informed consent was taken from all patients after explaining the procedure.

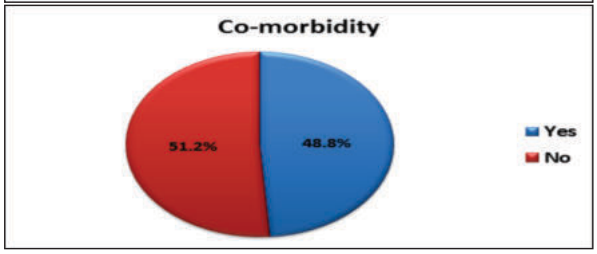
RESULTS:

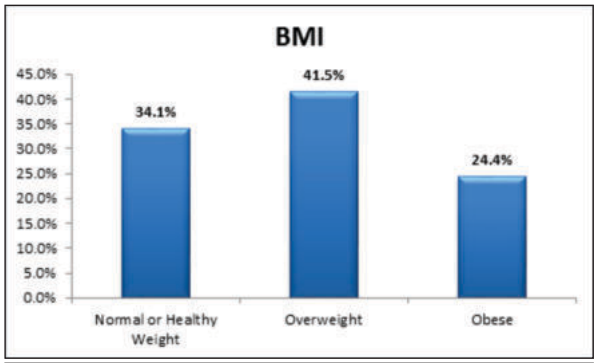
Total 70 TKRs performed on 41 patients were included in the study. Out of the 41 patients 10 were males and 31 were females. Mean age of the patients was 67.5 years (SD= 4.5 Years). Out of 41 patients, 37 patients had osteoarthritis and 4 patients had rheumatoid arthritis. 14 patients had normal Body Mass Index, 17 patients were overweight and 10 patients were obese. In overweight and obese category majority were females. Almost 48.8% patients had comorbidity, majority of them was either diabetes or hypertension or both. Standardized dressings were evaluated postoperatively for wound healing, infection rate and timely healing and allergic reactions. Mean length of hospital stay was 5.4 day (SD= 1.8 days),with one day prior admission. Postoperatively, in all patients drain was used for 24 hrs. Wound healing was normal in all the patients, only one patient had allergic reaction. Infection rate was nil. None of the patients had pain at the time of the removal of the dressing.

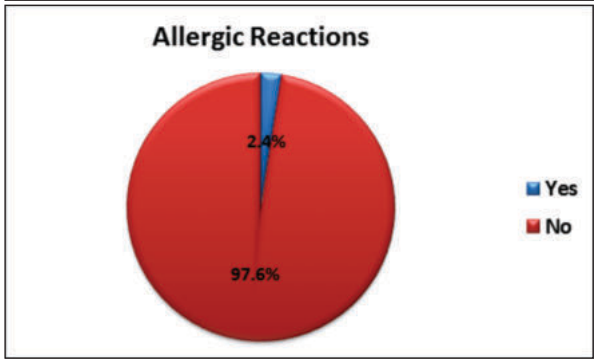
Table 1: Descriptive Statistics

Variable	Frequency	Percentage
Gender		
Female	31	75.6%
Male	10	24.4%
Age		
Mean age = 67.7 Years, SD = 6.34 Years, Median age = 69 years, Min = 51, Max =77		
Co-morbidity		
Yes	20	48.8%
No	21	51.2%
BMI		
Underweight	0	0.0%
Normal or Healthy Weight	14	34.1%
Overweight	17	41.5%
Obese	10	24.4%
Use of drain		
Yes	41	100.0%
No	0	0.0%
Wound Healing		
Normal	41	100.0%
Allergic Reactions		
Yes	1	2.4%
No	40	97.6%
Pain at the time of removal		
Yes	0	0.0%
No	41	100.0%
Length of stay		
Mean age = 5.5 days, SD = 0.961 days, Median stay = 5.00 days, Min = 3, Max = 8		









DISCUSSION:

Studies of many low-tension applications have shown that Dermabond has significant efficacy. The expectation is that the low infection rate found for low-tension wound closure also will hold for the high-tension closure used in TJA. Results from the present study confirmed that, in minimizing incision-site infections, Dermabond is an equally effective or superior tool. In addition, these results are also valid for patients already compromised by the vascular comorbidities of diabetes, anemia, or rheumatoid arthritis.

El-Gazzar Y et al conducted randomized, prospective, blinded study examined the use of Dermabond® as an adjunct to wound closure after TKA. The study proposed that Dermabond® supplementation to wound closure would result in a significant decrease in wound drainage after TKA. After standardized closure, patients were randomized into experimental or control groups with the experimental group receiving Dermabond® supplementation. Standardized dressings were evaluated postoperatively and drainage units were compared. The median drainage for the Dermabond group (153) was lower than the drainage for the control group (657) at a statistically significant level (P<0.001).

According to study carried out by Gromov K et al , tissue adhesive as an adjunct to standard wound closure after primary TKA reduced the number of dressing changes after surgery, but did not change the appearance or healing of the wound at 3 weeks based on the ASEPSIS scores. Whether the small differences observed here in terms of the number of dressing changes performed will justify the additional costs associated with using this product or whether there are other differences associated with the use of tissue adhesive that may prove important such as patient preferences or longer term differences in wound healing or infection should be studied in the future.

Miller AG et al had conducted a study to compare the efficacy of high-viscosity Dermabond (Ethicon, Somerville, New Jersey) and the efficacy of surgical staples in healing high-tension, mobile surgical sites of TJA. Of 236 total knee arthroplasties and 223 total hip arthroplasties (459 surgeries total), 250 were performed with Dermabond and 209 with staples. According to statistical analysis, case and control

infection rates were equivalent. Signs of acute inflammation (redness, drainage, dehiscence) also were statistically equivalent. Absence of staples accounted for a significant decrease in tape blisters and skin abscesses. Dermabond is superior to staples in high-tension wound care.

CONCLUSION:

Present study concluded that Dermabond® was found to be effective in wound healing without infection and pain in operated cases of total knee replacement.

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