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Comparative study of post-operative recovery after surgery in patients following early recovery after surgery(ERAS)protocolversusconventionalprotocol with uncomplicated appendicitis undergoing open appendicectomy”

Dr Tina Ramlingam,Dr Mohd Abdul RehmanTamboli,Dr Avinash Landge

Resident GMC Nanded

Assistant professor GMC Nanded

Assistant professor GMC Parbhani

Abstract

Enhanced Recovery after Surgery” (ERAS) was known as “fast track” surgeryor “enhanced recovery protocol” (ERP).The study conducted was a comparative study of post-operative recovery in patients undergoing open appendicectomy following ERAS protocol and conventional protocol. This was carried in tertiary care centre after obtaining from the institutional ethical committeeThe aim of the study was to compare the outcomes in the study population Thestudywasconductedin100patientswhoweredividedastwogroups namely test and control group

The test group was given preoperative preoperative carbohydrate loading, avoidance of NGT and drains intraoperatively, early mobilisation and resumption of oral fluids early compared to control groupThe average duration of stay in test group was 2 days whereas in control group was 3 days which was statistically significant with p value <0.00

INTRODUCTION

“Enhanced Recovery after Surgery” (ERAS) was known as “fast track” surgery or “enhanced recovery protocol” (ERP). In the previous decades,there

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has been a tendency to aim for a shorter hospital stay following several surgicalprocedures,includingGastrointestinalsurgery.Enhancedrecoveryis a new way of improving the experience of patients who need major surgery. It helps patients recover sooner so life can return to normal as quickly as possible.

ERAS protocols comprise a combination of various perioperative patient care methods using a multidisciplinary team approach that integrates evidence-based interventions which reduces surgical stress, maintains postoperative physiological function and accelerates recovery in patients undergoing major surgery.

ERAS protocols involve pre, intra and postoperative elements and their fundamental aspects focus on the preoperative counselling, reducing fasting period, optimal fluid management, decreased use of tubes, opioid-sparing analgesia and early mobilization. More than 234 million major surgical procedures are performed globally each year and despite advances insurgical and anaesthetic care, morbidity after abdominal surgery remainshigh.The Fast-track or enhanced recovery after surgery (ERAS) clinical pathways have been proposed to improve the quality of perioperative care with the aim of attenuating the loss of functional capacity and accelerating the recovery process. The ERAS pathways reduce the delay until full recovery after major abdominalm surgerybyattenuatingsurgicalstressandmaintainin

postoperative physiological functions. The implementation of the ERAS pathways has been shown to impact positively in reducing postoperative morbidity and as a consequence length of stay in hospital (LOSH) and its

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related costs are reduced.Use of the ERAS pathway has been shown to reduce care time by more than 30 percent and to reduce postoperative complications by up to 50 3 percent. ERAS pathways have been implemented successfully in specialties like pancreatic, gynaecologic, cardiovascular, thoracic, paediatric, orthopaedic, colorectal surgery and urologic surgery. To this end, this study aimed to evaluate the efficacy and safety of ERAS protocols for patients with Gastro intestinal surgery.ERAS is a multimodal peri-operative care pathway designed to achieve early recovery for patients undergoing major surgery. ERAS at first re-examines traditional practices, replacing them with evidence based best practices when necessary. Second, it is comprehensive in its scope, covering all areas of the patient's journey through the surgical process. The key factors that keep patients inthe hospital aftersurgeryinclude theneedforparenteralanalgesia, the need for intravenous fluids secondary to gut dysfunction, bed rest caused by lack of mobility. The central elements of the ERAS pathway address these key factors, helping to clarify how they interact to affect patient recovery. In addition, the ERAS pathway provides guidance to all involved in peri- operative 4 care, helping them to work as a well-coordinated team to provide the best

AIMSANDOBJECTIVES

1) To assess the feasibility of applying enhanced recovery after surgery guidelines.

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To compare the outcomes in patients undergoing appendicectomy with conventional practice andafter applying principles of early recovery after surgery

MATERIALSUSEDAND METHODS

The following study was conducted in tertiary care centre. It is a comparative study, the source of the study being patients admitted in general surgery wards planned for open appendicectomy. The period of study was from September 2020 to November 2021. Inclusion and exclusion criteria were made, only those patients satisfying both those criteria were included in the study

Inclusioncriteria

a) Gender:BothMaleand Female
b) Acuteabdominalpain
c) feverandvomitingwithnausea

Exclusion criteria

a) Thosepatientswhoarenotwillingforthe study.
b) Patientsonanticoagulationtherapy
c) Patientswithdiabetesoninsulin(type1or2)
d) Patientsnotwillingorfitforsurgery
e) Complicationslikeperforation.

Thesamplesizeofthisstudywas100dividedintotwogroups Test Group - 50 patients

ControlGroup-50patients

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Patient admitted in general surgery ward, who fulfilled both inclusion and exclusion criteria were selected. The patients and the attenders wereinformed about the nature of study, the components of study and the complicationsthat mayhappen. Those patients who gave consent alone were included in this study.Aproformawaspreparedtorecordthefindings PRE-OP COUNSELLING:

In the test group of 50 patients undergoing open appendicectomy, each patient and their attenders were counselled adequately. Clear instructions were given regarding the nature of disease, the surgical procedure to bedone, core components and its benefits, instructions regarding early mobilisation, early feeding and breathing exercises after surgery.

MINIMALSTARVATIONANDCARBOHYDRATELOADING:

patients posted for surgery were kept in nil per oral for maximum of 6 hours before surgery.

Usually, patients are given 400ml CHO drink 2 hours before surgery. Due to non-availability of CHO drink, 100ml of 25% dextrose was infused 3hours before surgery to test group.

AVOIDANCEOFMECHANICALBOWELPREPARATION:

Oral mechanical bowel preparation was not done as chosen patients were operated on emergency basis

ANTIBIOTIC PROPHYLAXIS:

Injection cefotaxime 1g IV stat dose was given half an hour prior to skin incision

DEEPVEINTHROMBOSISPROPHYLAXIS:

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Deepveinthrombosisprophylaxis wasnotgivenastheduration between time of admission and operative intervention was very short.

DVTprophylaxisincolorectalsurgeryisusually giventhenightbeforesurgery

INTRAOPERATIVE:

EPIDURALANALGESIAANDLOCALBLOCKS:

All patients in test group received epidural analgesia and continued it for 24 hours post-operatively. Few patients were given transverse abdominis plane block when epidural catheters were not available in our centre as an alternative.

SURGICALAPPROACHANDINCISION:

In this study, only open surgeries were included and the length of the MacBurney's incision was kept to the minimum as possible.

AVOIDANCEOF POST-OPERATIVEDRAINS, NASOGASTRICTUBESAND URINARY CATHETERS:

Routine nasogastric tube, catheters were avoided to the maximum in test group

POSTOPERATIVECOMPONENTS:

AVOIDANCEOFOPIATES:

Post-operativelypatients intestgroupwereonepiduralanalgesiafor24hours and later patients were given injection diclofenac intramuscularly for breakthrough pain.

Patientsincontrolgroupreceivedthesameforanalgesia

EARLY POSTOPERATIVE DIET:

Patients in test group were started on oral fluids the next day after surgery

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(POD 1) and soft diet on POD 2 whereas patients in control group received oral fluids on pod 2

EARLYPOSTOPERATIVEMOBILISATION:

Patients were helped to sit in a chair on the evening of surgery, they were made ambulant from day one. The study patients were managed in the post-operative ward, examined daily with TPR/BP/I/O CHARTS, complaints were attended immediately.

Dischargecriteria:-

1. Hemodynamicallystable
2. Normaltemperature
3. Consciousandoriented
4. Toleratingnormaldiet

The patients who fulfilled the above criteria were discharged and were called for follow up after 5 days

OBSERVATIONAND RESULTS

The collected was analysed using SPSS software and the results were tabulated

To describe about the data descriptive statistics frequency analysis, percentage analysis was used for categorical variables and the mean & standard deviation were used for continuous variables. To find the significant difference between the bivariate sample independent groups the Unpaired

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sample t-test was used

Pvalue<0.005isconsideredsignificant

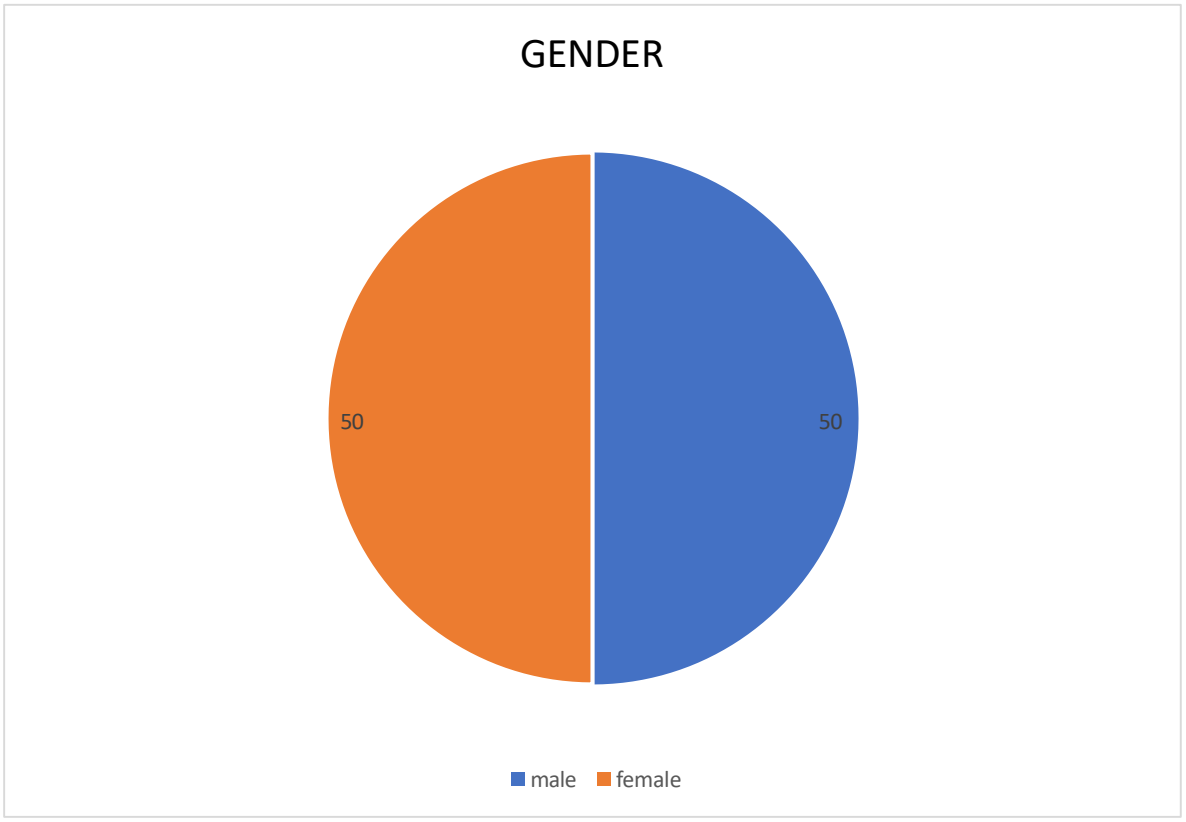

Table1:genderdistributionofthestudypopulation Out of

100 patients there were 50 male and female patients

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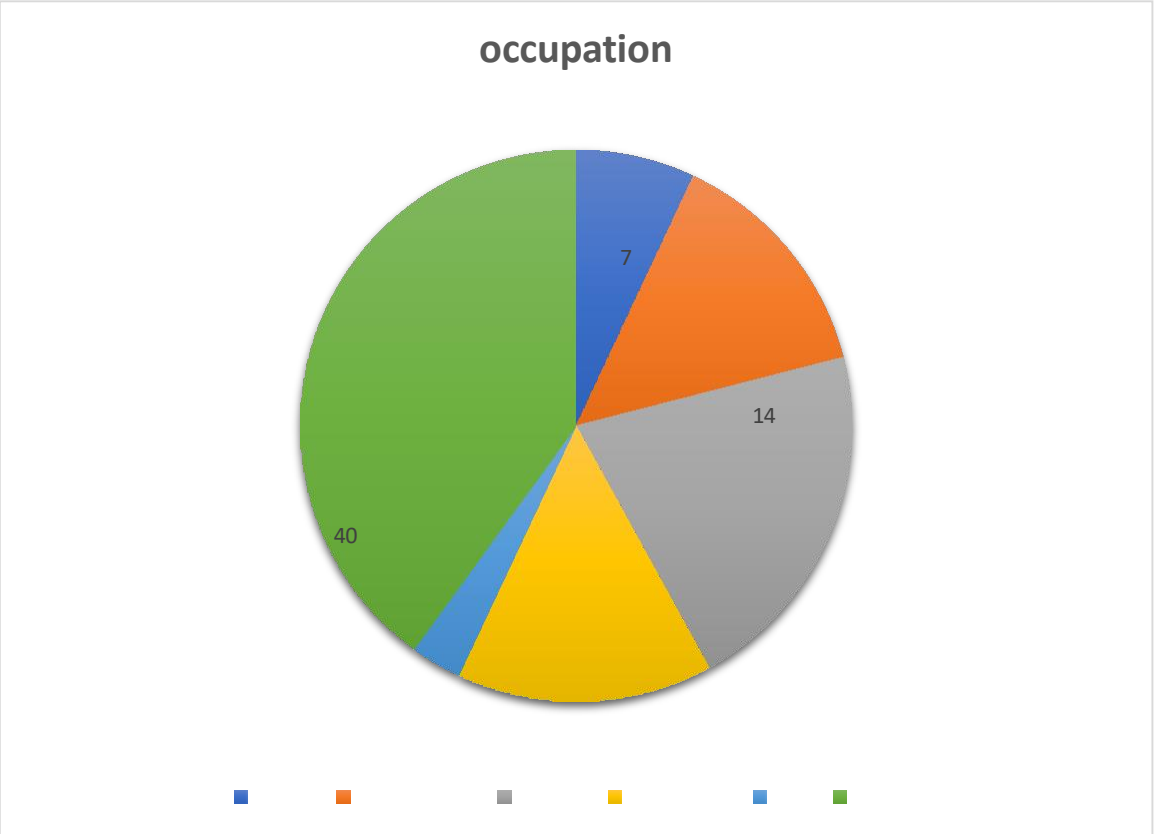

Table2:occupationofthestudypopulation

In the study population 40% were students, 21% were farmers, 15% were housewives, 14% daily wagers, 7% were coolies and 3% were small scale workers

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Table3:crosstabof occupationofthestudypopulation

OCCUPATION	FREQUNCY	PERCENT(%)	CUMMULATIVE PERCENT(%)
Coolie	7	7	7
Dailywager	14	14	21
Farmer	21	21	42
Housewife	15	15	57
Small scale worker	3	3	60
Student	40	40	100

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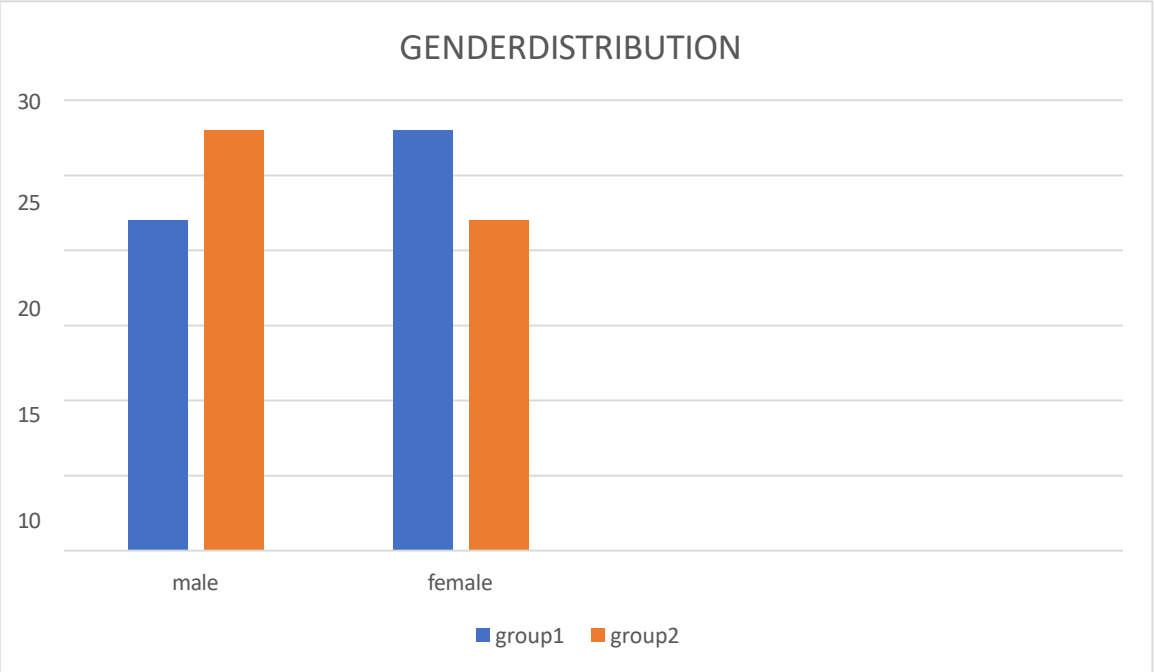

Table4:genderdistributionofthestudypopulation

Thereweretotally22malesand28femalesingroup1whichisthecontrol group

Therewere28malesand22femalesingroup2 whichisthestudygroup

GROUP	GENDER	FREQUENCY	PERCENTAGE
GROUP 1	Male Female	22 28	44% 56%
GROUP 2	Male female	28 22	56% 44%

Table5:crosstabofgenderdistributionofthestudypopulation

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Table6:Durationofstayinhospitalinboth groups

NO.OFDAYS	FREQUENCY	PERCENT(%)	CUMMULATIVE PERCENT(%)
2	49	49	49
3	20	20	69
4	23	23	92
5	6	6	98
6	2	2	100
TOTAL	100	100	

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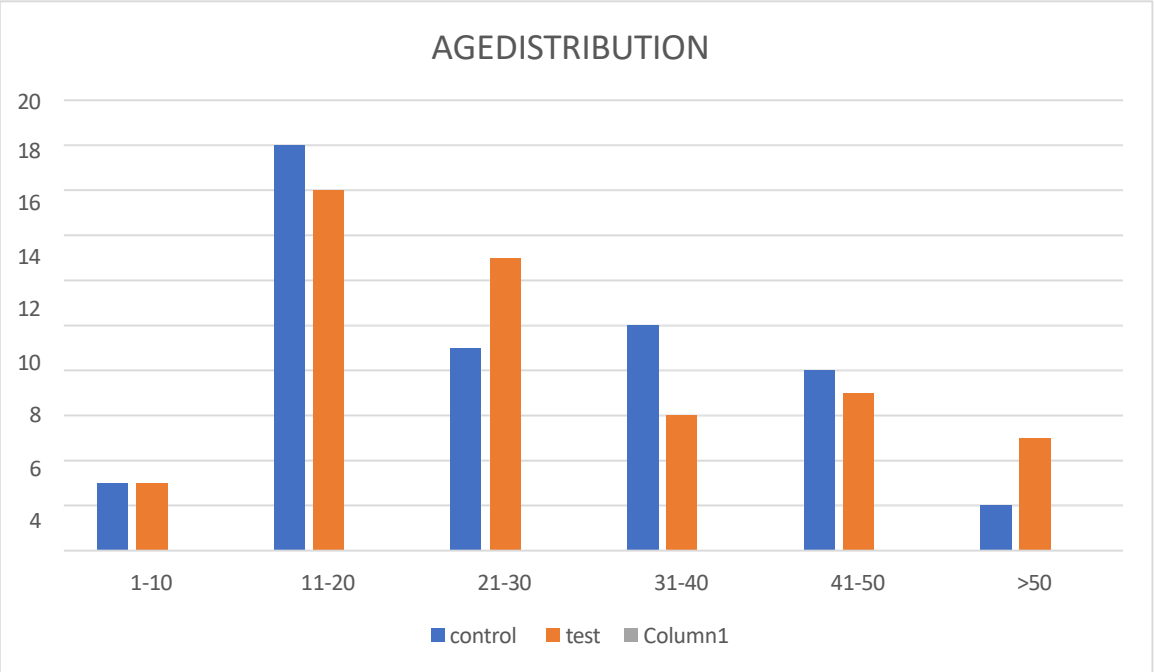

Table7:agedistributioninstudypopulation

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AGE(YEARS)	CONTROL GROUP	TESTGROUP	TOTAL
1-10	3	3	6
%In group	6%	6%	6%
11-20	18	16	34
%Ingroup	36%	32%	34%
21-30	9	13	22
%Ingroup	18%	26%	22%
31-40	10	6	16
%Ingroup	20%	12%	16%
41-50	8	7	15
%Ingroup	16%	14%	15%
>50	2	5	7
%Ingroup	4%	10%	7%
Total	50	50	100

Table8:age ofthestudypopulation

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AGE(YEARS)	FREQUENCY	PERCENT(%)	CUMMULATIVE PERCENT(%)
1-10	6	6	6
11-20	34	34	40
21-30	22	22	62
31-40	16	16	78
41-50	15	15	93
>50	7	7	100
TOTAL	100	100	

Table9:agedistributionofthestudypopulation

DISCUSSION

In this study of comparing the effectiveness of ERAS with conventional wayof management of patients undergoing open appendicectomy, the study population was divided into two groups namely group 1 the control group and group 2 the test group

Thetestandcontrolgrouphad50patients each

AGEDISTRIBUTION:

The average age of patients undergoing open appendicectomy was 26 in the test group and 29 in the control group

Patients under 20 years were 40 in number forming the majority group of the study, 38 were in 21-40 years range and 22 were more than 40 years

Youngest patient in test group was 9 years and oldest being 52 years

Youngest patient in test group was 7 years and oldest being 71 years

Patients under age of 1-10 years were 6% in test group, control group and of

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total

Patients from age group of 11-20 years was 36% in control group, 32% in test group, totally they form 34% of total.

Patientscomingunderagegrouppf21-30yearswas18%incontrolgroup,26 %intestgroupandtheymake22%ofpopulation.

Patientsfrom31-40yearswas20%incontrolgroup,12%intestgroup, forming 16% of total study group.

Patients from 41-50 years was 16% in control group and 14% in test group,together accounting for around 15%.

Patients above 50 years were 4% in control group and 10% in test group and totally 7% of study population

GENDERDISTRIBUTION:

The sex distribution of the study population is as follows surgeries are almost seeninthisstudy. Thefemalepatientsinthisstudywere 56%incontrolgroup and 44% in test group, the total female patients were 50 %.

Themalepatientswere 44%incontrolgroupand56%intestgroup.Thetotal male patients were 50% in this study. There is no statistical significance among gender distribution.

LENGTHOFHOSPITALSTAY:

The average length of hospital stay for test group patients were2 days withstandard deviation 0.43

The average length of hospital stay for control group patients were3.5 days with standard deviation 1.00

Theobtainedpvalueis 0.001

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There is statistically significant difference between test & control group regarding length of hospital stay. The length of hospital stay for test group patients was low compared to control group

POSTOP COMPLICATIONS

Out of 100 patients in the study population seven patients from control group and 2 patients from test group had surgical site infection which was managed by regular cleaning and dressing

Thosepatientswerefollowedupandresuturingwasdoneafterproper healing

Conclusion

This study has highlighted the benefits of ERAS protocol and its widespread implementation in a multitude of surgeries would change the outlook of traditional practices. The increasing number of statistically significant studies pertaining to ERAS protocol will also open doors to new innovations and recommendations thereby reducing the financial and psychological burden on the patients

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