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INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/16463
DOI URL: http://dx.doi.org/10.21474/IJAR01/16463

RESEARCH ARTICLE

A Prospective Study to Compare Continuous Versus Interrupted Suture in Prevention of Burst Abdomen

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Manuscript Info

Manuscript History
Received: 19 January 2023
Final Accepted: 24 February 2023
Published: March 2023

Abstract

Aims And Objectives: The present study was undertaken to assess theproportion of burst abdomen in post midline laparotomy patient usinginterruptedXsuturesversuscontinuoussuturetechniqueinsheathclosure.

Materials And Methods: A total of 50 patients undergoing midlinelaparotomyinemergencysettings,fromtheDepartmentofGeneralSurgery, Gadag Institute of Medical Sciences, Gadag, whose satisfying inclusion and exclusion criteria after takingwritten and informed consent were divided in to two groups of 25 each.In group A closure was performed using No.1 prolene suture, usinginterrupted X type, and in group B closure was done by continuousmethod,andthesepatients werefollowedupin thepostoperativeperiod.

Results: Patients were followed up in the early post operative periodand regular follow up. 3 of the patients developed wound dehiscence, incontrastwithcontrolgroupinwhich9patientsdevelopedburstabdomen. 1 of our patients from the study group developed incisionhernia,7 from control group developed incision hernia. In the presentstudy 22patientsin whom interruptedXsuturingwasdonehadanormal wound healing compared to 16 patients with continuous group.5 patients from the interrupted group had a prolonged hospital staycomparedto11patientsfromthecontinuousgroup.Therefore,Interrupted X suturing technique overweighs the disadvantages of thecontinuoussuturingtechnique.Hencethetechniqueshouldbeconsidered.

Conclusion: HenceInterruptedXsutureisbetterthancontinuoussheathclosureinpreventionofburstabdomen.

Introduction:-

Acute wound failure,otherwise known as wound dehiscence or burst abdomen refers to postoperative separation ofabdominal Musculo-aponeuroticlayers. Wound dehiscence is among the most dreaded complication faced by thesurgeon and is of great concern because of the risk of evisceration;the need for some form of intervention andpossibilityofrepeatdehiscence,surgicalwoundinfectionandincisionalherniaformation.

Acutewoundfailureoccursinapproximately1%to3%ofpatientswhoundergoanabdominaloperation.Dehiscence most often develops 7 to 10 days postoperatively but may occuranytime after surgery, from 1 to morethan20days.Amultitude offactorsmaycontributetowounddehiscence.Acutewoundfailureisoftenrelated to technical errors in placing sutures tooclose to [illegible] hematoma and infection can also p[illegible]ommon causes oflocalized wound separation. Increased intra-abdominal pressure(IAP)is often blamed for wound disruption and factors thatadversely affect wound healing are cited as contributing tothecomplication. In healthy patients, the rate of wound failure issimilar whether closure is accomplished with acontinuous orinterrupted technique. In high-risk patients, however, continuousclosure is worrisome because suturebreakageinoneplaceweakenstheentireclosure.Prevention of acutewoundfailureislargelyafunction ofcarefulattention to technical detail during fascial closure, suchas proper spacing of the suture, adequate depth of biteof thefascia, relaxation of the patient during closure, and achieving atension-free closure. For very high-risk patients,interruptedclosureisoftenthewisestchoice.Alternativemethodsofclosuremustbeselectedwhenprimaryclosureis not possible withoutundue tension. Although retention sutures were used extensivelyin the past, their use is lesscommontoday,with manysurgeonsoptingtouse a syntheticmeshorbioabsorbable tissue scaffold

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BackgroundandObjectives;-

The present study was undertaken to assess the proportion of burst abdomen in postmidline laparotomy patientusinginterruptedsuturesversus continuoussuturetechniquein sheathclosure.

MethodOfCollectionOfData:

A total of 50 patients undergoing midline laparotomy after taking written and informed consent and were dividedequally in to 25 cases each in the study group(interrupted)and control group (continuous suture) and were followedup inthepostoperativeperiod.

SourceOfData:

Allpatientssatisfyinginclusioncriteriaadmittedin GeneralsurgeryDepartment,GIMSGADAGforaperiodof1year

Methodology:-

MaterialsandMethods:-

All patients undergoing emergency Laparotomy atGIMS Gadag. Thisis theprospectivestudy. A written andinformed consent to be obtained from the patientsto be included in thestudy and data- complaints, generalexaminations, abdominalexamination,Biochemicalevaluationofblood sugar,bloodurea,electrolytes and other specificinvestigations, post op course carefully observed and criteria managed to analyzemorbidity,hospital stay.

Continuous closure was performed using No.1 prolene,care being taken place each bite 1.5 to 2 cm from the lineaalba edge with successive bites being placed 1 cm from each other.The edges of linea alba was gentlyapproximatedwithoutstrangulationwithanattempttokeepasuturetowoundlengthratio4:1.

Interrupted closure was performed using No.1 Prolenesuture.A large bite was taken outside→in2cm from the cut edgeof the lineaalba. The needle emerged on the other side from inside→outdiagonally 2 cm from the edge and 4cmabove and below the first bite.The strand was subsequently crossed or looped around the free end of sutureandcontinued outside→in, diagonally at 90 degree to the first diagonal.The two-end tied just tight enough to approximate theedgesoflinea albataking carenottoincludebowelorementumbetweentheedges.

This created Xlike crosses one on the surface and another deep tolineaalba.ThenextX suture was placed 1 cmawayfromthepreviousone.Henceforthina 14cmlong ,3Xsutures wereapplied.

EligibilityCriteria:

InclusionCriteria:.

Allpatientscheduledtoundergomidlinelaparotomyfor emergencyreasonswereincludedinthestudy.

1) ExclusionCriteria:

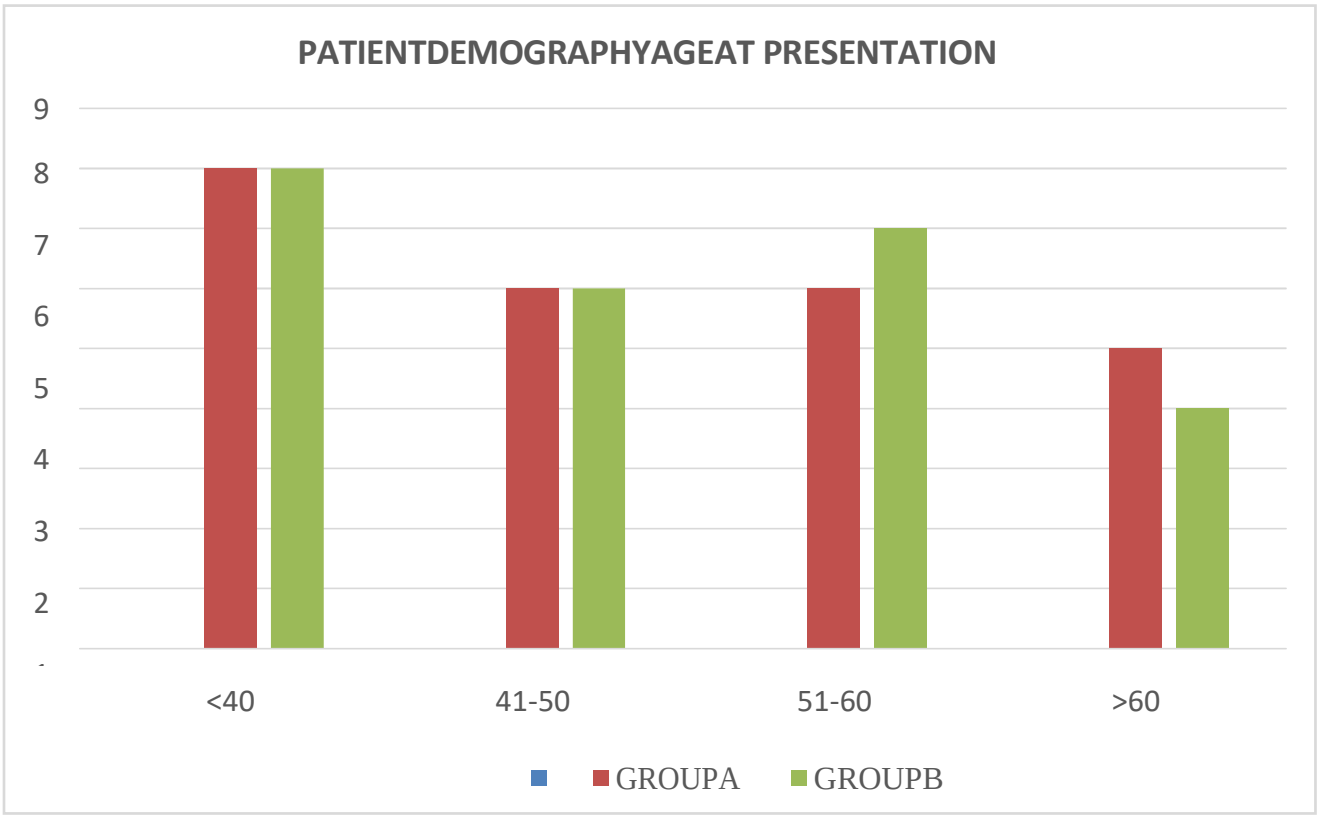
1. Patientsyoungerthan16 years
2. Patients who had undergone previous laparotomy for any conditions3.Patientswhorequiredare-explorationinpostopcoursewereexcluded.

2) Analysis

Data analysis was done with the help of computer using SPSS 18 software Using this software range, frequencies,percentages, means, standard deviations, chi square and 'p' values were calculatedand Chi-square test was used totestthesignificanceofdifferencebetweenquantitativevariables.

ResultsandObservation:-

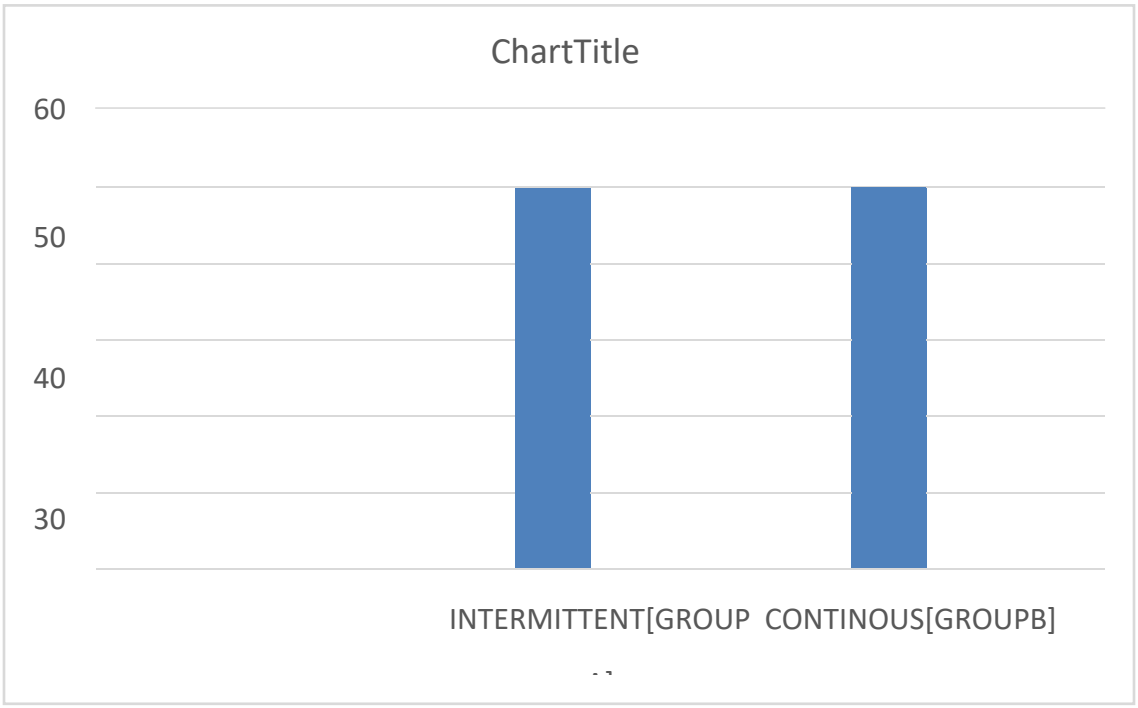
AGE GROUP INYEARS	NUMBER OFPATIENTS	PERCENTAGE	GROUP AN=25	GROUP BN=25
<40	16	32	8[32%]	8[32%]
41-50	12	24	6[24%]	6[24%]
51-60	13	26	6[24%]	7[28%]
>60	9	18	5[20%]	4[16%]



In this study age of the study is more than 26 years,youngest person included in the study series was 26 and eldestwas83yearsold.Almost32 %were in<40years.Thisincludes50%ingroup Aand 50 %ingroupB.

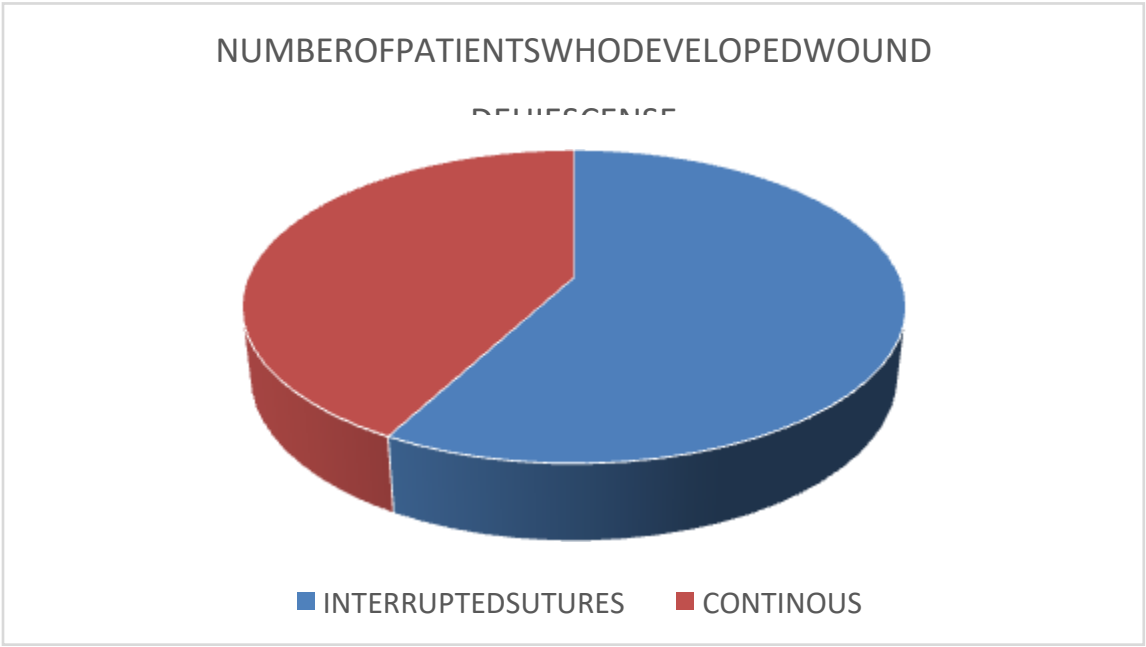
RectusSheath Closure TechniqueInEmergencySetting

TECHNIQUES		
INTERMITTENT[GROUP A]	25	50%
CONTINOUOS[GROUP B]	25	50%



WoundDehiscenceEmergencyCases

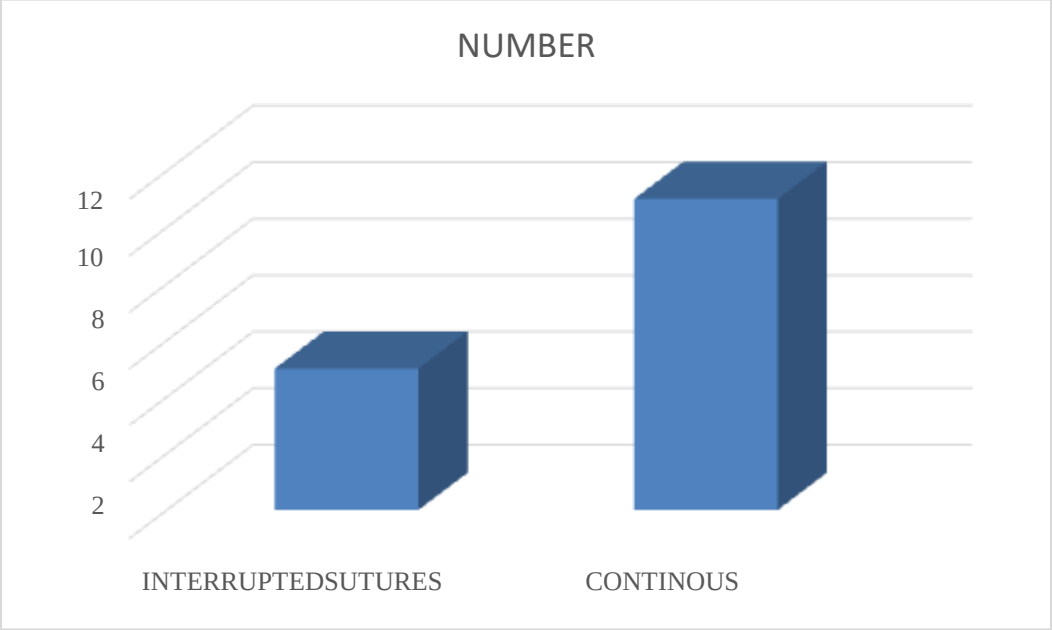
INTERMITTENTSUTURES	3
CONTINOUS	9



3) Pvalue=0.0347

ProlongedPost OpHospitalStayEmergencyCases

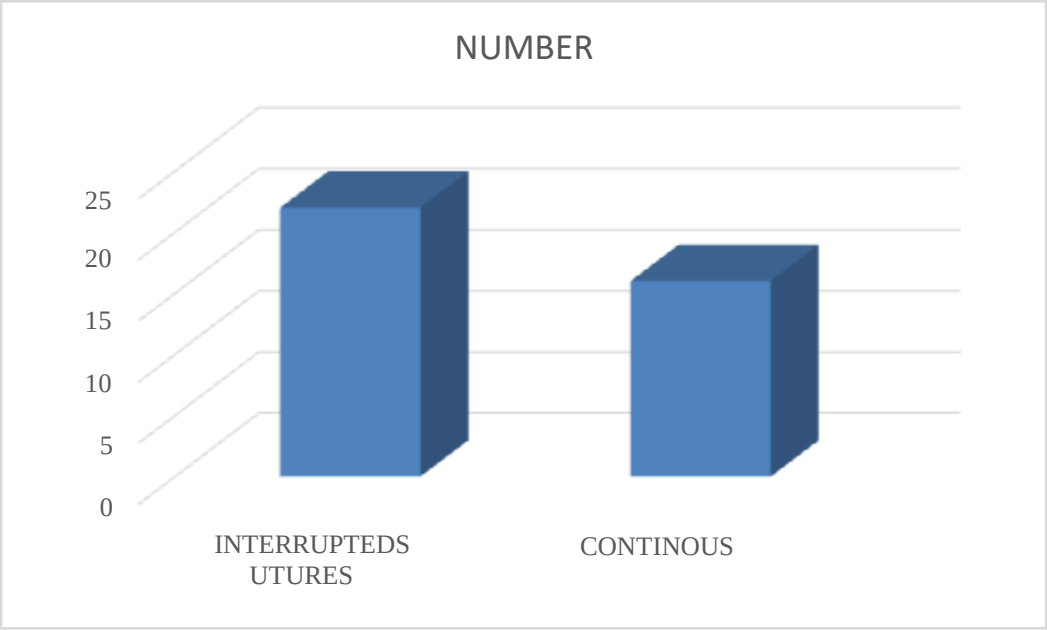
INTERRUPTEDSUTURES	6
CONTINOUS	12



4) Pvalue=0.044

NormalWound Healing

INTERRUPTED	22
CONTINOUS	16



5) Pvalue=0.03478

IncisionalHerniaEmergencyCases

INTERRUPTED	**1**
CONTINOUS	**7**

6) Pvalue=0.013

Summary

WOUND DEHISCENCE, is a dreaded complication that leads to infectious complications, mental stress, prolongedhospitalstay,sepsis,re-surgeryetc.Hostfactorslikediabetes,obesity,immunecompromisedstatus,patient,malignancy completed chemotherapy,radiotherapy,surgeon's expertise,technique, suturingmaterial,any factors thatleads to increasedintraabdominal pressure.Continuous suturing of rectus sheath,in an emergency cases leads toincreased rate of wound dehiscence in the post operative period leading on to formation of incisional hernia in thefuture,hence such patients needs re-surgery in the post operative period in the hospital or may undergo for incisionalhernia repair in the future.Disadvantages of continuous sheath closureinclude,single knots are usually placed.Henceif patients develop wound infection,or any factors that increases intraabdominal pressure leads to give away ofrectus.In contrast if Interrupted X suturingis applied,three or four intermittent knots will hold the rectus thatpreventstheformationofwounddehiscence.

Conclusion:-

Hence study conducted in 50 patients who underwentlaparotomy 25 patients in which them Interrupted X suturewas applied,they were followed up in the early post operative period and regularfollow up- 3 of the patientsdevelopedwound dehiscence,incontrastwithcontrolgroupinwhich9 patientsdevelopedburstabdomen.

1ofour patientsfromthestudygroupdevelopedincisionalhernia,7fromcontrolgroupdevelopedincisionalhernia.

Therefore,InterruptedX suturing technique overweighs the disadvantages of the continuous suturing technique.

Hence thetechniqueshouldbeconsidered.

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