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Prospective controlled randomised trial on Prevention Of Postoperative abdominal Adhesions by icodextrin 4% solution after laparotomic operation for small bowel obstruction caused by adherences

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Registration date 05/07/2007	**Overall study status** Completed	[_] Statistical analysis plan [X] Results
Last Edited 27/10/2021	**Condition category** Surgery	[_] Individual participant data

Plain English summary of protocol
Not provided at time of registration

Contact information

Type(s)
Scientific

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Additional identifiers

Protocol serial number
001

Study information

Scientific Title
Prospective controlled randomised trial on Prevention Of Postoperative abdominal Adhesions by icodextrin 4% solution after laparotomic operation for small bowel obstruction caused by adherences

Acronym
POPA study: Prevention of Postoperative Adhesions

Study objectives
Adhesive Small Intestine Occlusions (ASIO) are an important cause of hospital admission and are associated with significant morbidity and mortality, placing a substantial burden on healthcare systems worldwide. Postoperative adhesions account for more than 40% of all cases of intestinal obstruction, with 60 to 70% of those involving the small bowel. Of patients who require abdominal reoperation, 30 to 44% have adhesion-related intestinal obstruction. For small-bowel obstruction, the incidence rises to 65 to 75%. Mortality rates range from 3% for simple intestinal obstructions to 30% when the bowel becomes necrotic or perforated.

The cumulative recurrence rate for patients operated once for ASIO is 18% after ten years and 29% at 30 years. For patients admitted several times for ASIO, the relative risk of recurrent ASIO increases with the increasing number of prior ASIO episodes. The cumulative recurrence rate reaches 81% for patients with four or more ASIO admissions. In USA adhesiolysis is responsible for more than 300,000 hospitalisations annually, accounting for nearly 850,000 days of inpatient care and $1.3 billion in hospitalisation and surgical expenditures.

An increasing number of adhesion-reduction agents, in the form of site-specific and broad-coverage barriers and solutions, are becoming available to surgical teams to complement optimal surgical techniques. Icodextrin 4% solution (Adept, Shire Pharmaceuticals, UK) is a high-molecular-weight a-1,4 glucose polymer that is approved in Europe for use as an intra-operative lavage and a post-operative instillate to reduce the occurrence of post-surgery intra-abdominal adhesions. The icodextrin colloid is absorbed slowly, resulting in the retention of the fluid within the peritoneal cavity for more than four days. The solution reduces adhesions by a process of hydroflotation, keeping the peritoneal organs and tissues apart during the critical post-surgery period when the patient is at greatest risk of adhesion formation. Icodextrin has an extensive safety profile and has been used as a 7.5% solution in Continuous Ambulatory Peritoneal Dialysis (CAPD) for more than 50,000 patient-years. In addition, preclinical and preliminary clinical studies have demonstrated the safety and efficacy of icodextrin 4% solution in the reduction of adhesion formation following abdomino-pelvic surgery.

In literature there are no randomised trials on the use of this solution to prevent adhesions after ASIO operation. The current clinical study evaluates the safety and effectiveness of icodextrin 4% for decreasing the incidence, extent, and severity of adhesions in patients after abdominal surgery for ASIO.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approval received from the Ethics Board of St Orsola Malpighi University Hospital on the 11/12 /2006, ref: 112/2006/U/ disp

Primary study design

Interventional

Study design
Prospective randomized controlled investigation

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Prevention of postoperative abdominal adhesions

Interventions
The study will be performed in the Department of Transplant, General and Emergency Surgery of St Orsola-Malpighi University Hospital (Bologna, Italy); a large teaching institution, with the participation of all surgeons who accept to be involved, together with the Emergency Surgery Department of Maggiore Hospital (Bologna, Italy). These two institutions serve all surgical emergencies of Bologna city. The study is designed and conducted in compliance with the principles of Good Clinical Practice regulations.

ASIO is a common disease. Any improvement in this field will benefit many patients reducing the re-operative rate. All our patients will be informed about the study and an informed consent will be obtained. There will be no inconvenience caused to the patients. All of the medical information obtained from the patients will be kept confidentially among the research scientists conducting the study. The patients will be free to withdraw from the study whenever they want without any obligation.

Preoperative data collected includes patient demographics and co-morbid conditions (genitourinary, cardiac, pulmonary, gastrointestinal, renal, or rheumatological) and a detailed history of previous occlusions and surgical procedures.

A decompression with nasogastric tube is carried out. The average nasogastric tube output of each patient (total amount of drainage/duration) is calculated. For patients submitted to Gastrografin administration before surgery only the output before the procedure is considered. Intravenous fluid therapy is performed. Plain abdomen X-rays are done and maximal small intestine diameter is calculated. The duration of symptoms before admission and the number of previous operations are also evaluated.

Subjects with surgical indication to laparotomy are enrolled and randomised. A written informed consent is obtained. The laparotomic surgical procedure is carried out and existing abdominal cavity adhesions are documented. Subjects are submitted to adhesiolysis with bowel resection if necessary with or without anastomosis. The first group receive traditional treatment (control group) whereas the second group is treated with icodextrin 4% before abdomen closure. The use of irrigants during surgery is not allowed. Peritoneal contamination is evaluated with cultures.

Per protocol the abdominal fascia is closed with a running Polydioxone Suture (PDS) and the skin is closed with sutures or skin staples. Only one abdominal drainage is allowed in case of bowel resection and it has to be removed seven days after the operation. In case of bowel leakage the patient will drop out from the study.

For all patients, perioperative parameters are recorded, including blood loss, total length of the midline incision, method of anastomosis, method and timing of incision openings and closures, corticosteroid use. Operative wounds are classified as clean, clean contaminated, and contaminated as described by Schwartz et. al. The patients are followed-up for five years.

In case of reoperation for ASIO the procedure is carried out by a third party blinded to the patients previous anti-adhesive treatment: this surgeon evaluates incidence, location, severity, and extent of adhesions. The incidence of adhesions is assigned a severity score of:
0: no adhesions
1: filmy thickness, avascular
2: moderate thickness, limited vascularity, or
3: dense thickness, vascularised

Adverse Events (AEs) are collected for the duration of the study, beginning at the time of randomisation. AEs are identified and described by the primary investigators.

Intervention Type
Drug

Phase
Not Specified

Drug/device/biological/vaccine name(s)
Icodextrin

Primary outcome(s)
To evaluate the therapeutic role of icodextrin 4% to reduce ASIO incidence.

Key secondary outcome(s)
To reduce adherences rate (in case of reoperation for ASIO).

Completion date
01/01/2009

Eligibility

Key inclusion criteria
1. Adult patients (over 18 years)
2. Submitted to laparotomic surgical procedures for ASIO
3. Clinical and radiological evidence of adhesive small intestine obstruction
4. American Society of Anesthesiologists (ASA) grade one to three patients
5. Informed consent

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group

Adult

Lower age limit
18 Years

Sex
Not Specified

Total final enrolment
91

Key exclusion criteria
1. Intra-abdominal cancer
2. Peritoneal contamination
3. Inflammatory Bowel Disease (IBD)
4. Positive history of radiotherapy
5. Patients with an intra-operative findings of different pathology will be excluded from the study

Date of first enrolment
01/01/2007

Date of final enrolment
01/01/2009

Locations

Countries of recruitment
Italy

Study participating centre
Via Lidice 4
Bologna
Italy
40139

Sponsor information

Organisation
Baxter Biosurgery (Italy)

ROR
https://ror.org/02kf9ya90

Funder(s)

Funder type
Hospital/treatment centre

Funder Name
St Orsola Malpighi University Hospital Bologna (Italy)

Results and Publications

Individual participant data (IPD) sharing plan
Not provided at time of registration

IPD sharing plan summary
Not provided at time of registration

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		01/02/2012	27/10/2021	Yes	No
Protocol article	protocol	18/12/2008	06/01/2021	Yes	No