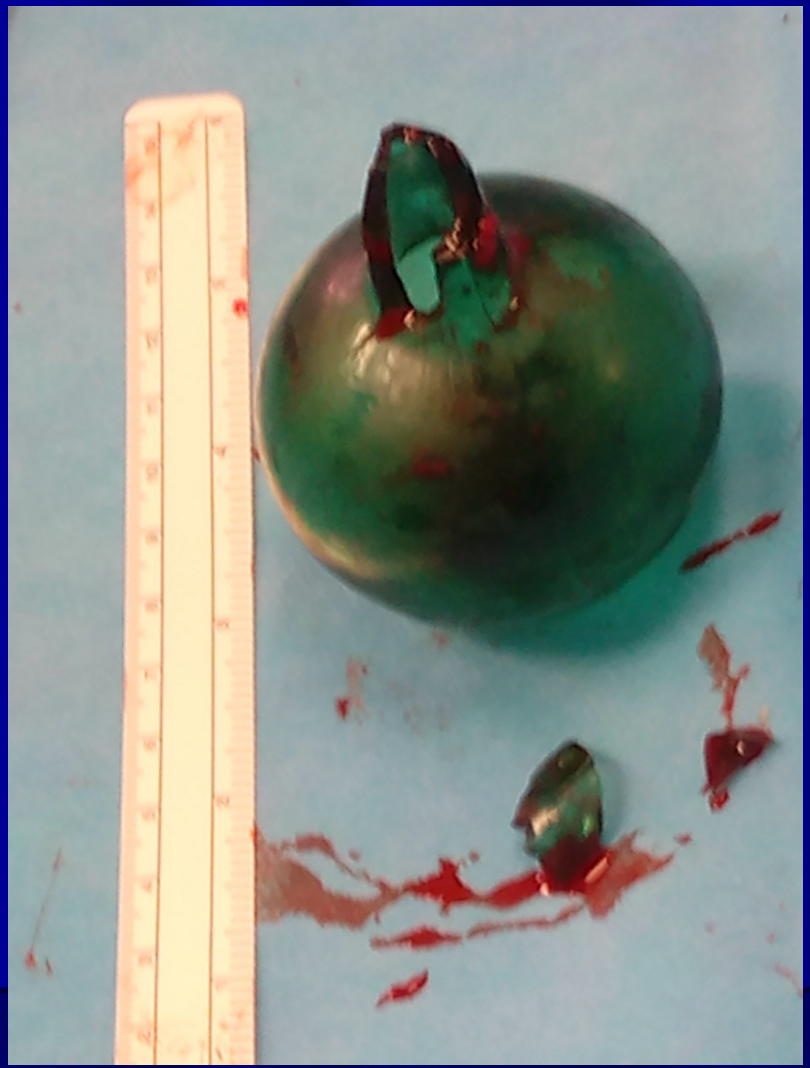
The Journal Club

A Morgan
Consultant Colorectal Surgeon

- **J Colorectal Disease, Sep 2016. Vol 18 no.9:**
  - Systematic review on use of VAC for Entercutaneous Fistula
  - Which Technique to choose in the era of minimal access Rectal surgery
  - Long Term Outcome of Local Vs Radical resection of T1 Rectal Ca
  - Watch & Wait in Rectal Cancer
  - Timing of Adjuvant chemotherapy in colorectal cancer
  - TME Quality Does not improve the Prediction of Outcome
  - Impact of SSI reduction Strategy after Colorectal resection (NSQIP) 41% Reduction
  - Screening Vs Non Screening Colonoscopy, Scope For improvement.

QUIZ



Stoma Site Closure, Does it Require Reinforcement

A. MORGAN
Consultant Surgeon

- Hands Up Please:
  - Stoma Site Proposes a potential Morbidity
  - We Should Re-inforce all stoma sites on closure
  - Re-inforcement of stoma is feasible
  - Re-Inforcement of stoma site is safe

ROCSS, Reinforcement of Closure of Stoma Site

Sep 2016

Original article

Feasibility study from a randomized controlled trial of standard closure of a stoma site *vs* biological mesh reinforcement

On behalf of the Reinforcement of Closure of Stoma Site (ROCSS) Collaborative and the West Midlands Research Collaborative[1]

Received ... Revised ... Accepted ... Published online ...

Abstract

Aim Hernia formation occurs at closed stoma sites in up to 80% of patients. The Reinforcement of Closure of Stoma Site (ROCSS) randomized controlled trial is evaluating whether placement of biological mesh during stoma closure safely reduces hernia rates compared with closure without mesh, without increasing surgical or wound complications. This paper aims to report recruitment, deliverability and safety from the internal feasibility study.

Method A multicentre, patient and assessor blinded, randomized controlled trial delivered through surgical trainee research networks. A 90 patient internal feasibility study assessed recruitment, randomization, deliverability and early (30 day) safety of the novel surgical technique (ClinicalTrials.gov registration number NCT02238964).

Results The feasibility study recruited 90 patients from the 104 considered for entry (48 to mesh, 15 to no mesh). Seven of eight participating centres randomized patients on the 30 days of opening. Overall, 41% of stoma were created for malignant disease and 73% were ileostomies. No mesh-specific complications occurred. Thirty one postoperative adverse events were reported by 31 patients, including surgical site infection (9%) and postoperative ileus (6%). One mesh was removed for re-access to the abdominal cavity, for reasons unrelated to the mesh. Independent review by the Data Monitoring and Ethics Committee of adverse event data by treatment allocation found no safety concerns.

Conclusion Multicentre randomization to this trial of biological mesh is feasible, with no early safety concerns. Progression to the full Phase III trial has commenced. ROCSS shows that trainee research networks can efficiently develop and deliver complex interventional surgical trials.

Keywords Randomized trial, hernia, stoma, incisional hernia, biological mesh, medical device

What does this paper add to the literature?

This study proves the feasibility of a novel biological mesh placement technique at the time of stoma closure. It identifies no early safety concerns, allowing progression to the full trial. It shows how collaborative surgical networks can speed intervention through quality-assured randomized controlled trials.

Introduction

Incisional hernias at the site of a previously closed stoma are common, occurring in up to 80% of cases [1–5]. Up to 50% of patients who develop a hernia are subsequently subjected to complex reoperation with significant morbidity [1,3]. Prevention of hernia formation should benefit long-term patient outcomes and reduce costs from the need for further follow-up and possible reoperation. This long-term benefit will only be realized if the mesh can be safely implanted without a significant increase in short-term procedural complications and wound healing.

Synthetic mesh reinforcement is an established treatment for primary and recurrent hernias, and has been advocated for selected use in clean wounds to prevent herniation [6]. However, superficial healing problems in

Correspondence to: ...

- **Background:**
  - 30 % of Closed Stoma
  - 50% Complex Reoperation with Significant Morbidity
  - Prevention improves outcome and avoids complex re-operation
  - It may reduce the long term cost
  - There is no significant increase in morbidity from previous studies
  - We do not have accurate data on long term outcome
  - Synthetic Mesh only in clean wounds but recorded SSI & wound breakdown at stoma site.

- **Why this trial was established ?**
  - ROCCS trial as a result of a recommendation by the **IDEAL Framework** (Idea, Development, evaluation, assessment and Long Term Study Framework)
  - Initial Proof of Principle study in seven consented non-randomized patients (Phase 1-2a)
  - Phase 3: A Multicentre randomized controlled trial comparing using a biological mesh for reinforcement Vs. Current Standard Practice of no mesh application.
  - West Midland Collaborative Research **(WMRC)** planned the trial.

- ***Aim :***
  - *90 Patients*
  - *5 Different Hospitals*
  - *12 Months*
  - *Randomization*
  - *Safe Delivery, Consultant Presence*
- ***Outcome :***
  - *Post op Adverse events, need to remove the mesh.*
  - *Operation Specific Adverse Events including (Re-operation)*
  - *SSI*
  - *Early Clinical Hernia Occurrence*
  - *If 20% planned mesh failed, Stopping Rule and revision.*

- **Centre & Patient Eligibility**
  - Inclusion
    - > 18
    - Ileostomy / Colostomy / loop or End
    - Previous Open or Laparoscopic
    - Trephine, midline or Laparoscopic.. All accepted
  - Exclusion:
    - If large para-stomal Hernia with definite need for a mesh "Excluded"
    - If pt. involved in another trial
    - Allergic to Pocrine or Collagen Products
    - FAP (Increased risk of cutaneous desmoid tumour)
    - Lack of Capacity
  - **Consent:**
    - Written information Sheet about the trial.
    - Consultant Surgeon / SpR / Trained Specialist Nurse

- **Randomization :**
  - **How:**
    - 1:1 Ratio Between the two Groups
    - Member of ROCSS Team at the site
    - Birmingham Clinical Trial Unit (Telephone)
    - Surgeon, Assisstant & Theatre Team only
    - Patient and Outcome Assessors : Blinded
    - In theatre Randomization to minimize risks of unblinding
  - Surgical and Quality Assurance:
    - Previous 20 Stoma Closure
    - Standardized Technique, Online demonstration and training
    - 1st case : Joint with a Senior Trial Surgeon
    - All : Prophylactic Antibiotics
    - Closure : Hand or Stapled (No Restrictions)

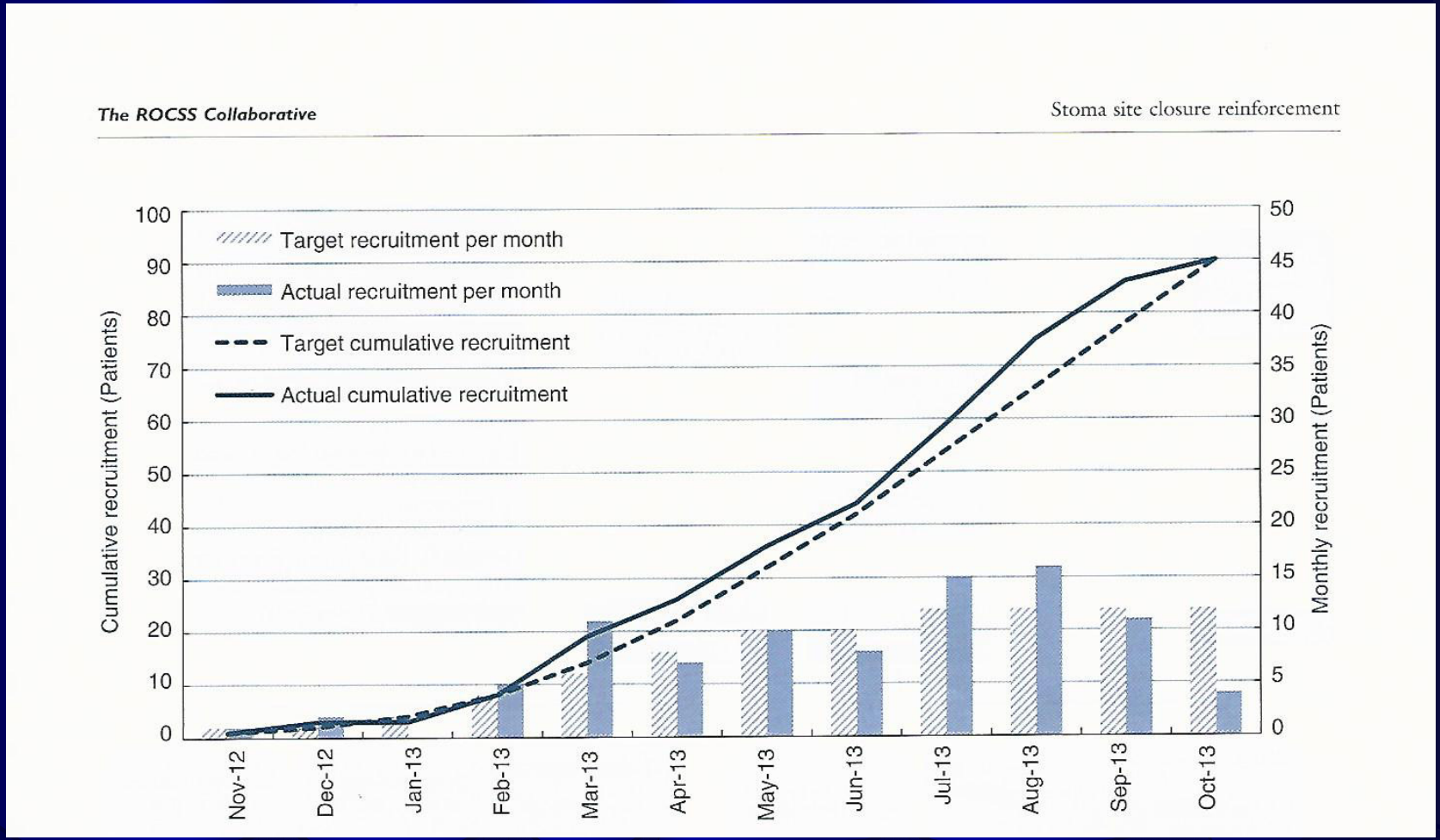
TECHNIQUE

Intra abdominal
Underneath Peritoneum
PDS Transfasial Bites
Minimal overlap 3 cm
Fascia Closed on the Top (Non absorbable)
40 ml.of Local Anaesthesia

Strattice™
RECONSTRUCTIVE TISSUE MATRIX
The next generation has arrived.

Fund: LifeCell (Acelity, Oxfordshire, UK)
No Control Over Trial

Recruitment Graph



Trusts

Table I Randomizing centres for the feasibility study and the number of patients randomized.

Randomizing centre	Total ($n = 90$)
Queen Elizabeth Hospital Birmingham	43 (48%)
Sandwell General Hospital	14 (16%)
Yeovil District Hospital	14 (16%)
Royal Albert Edward Infirmary	6 (7%)
Dorset County Hospital	5 (5%)
Manor Hospital	4 (4%)
Leicester General Hospital	2 (2%)
University Hospital Coventry	2 (2%)

concerns; they supported progression to a full Phase III trial.

CONSORT Flow Diagram

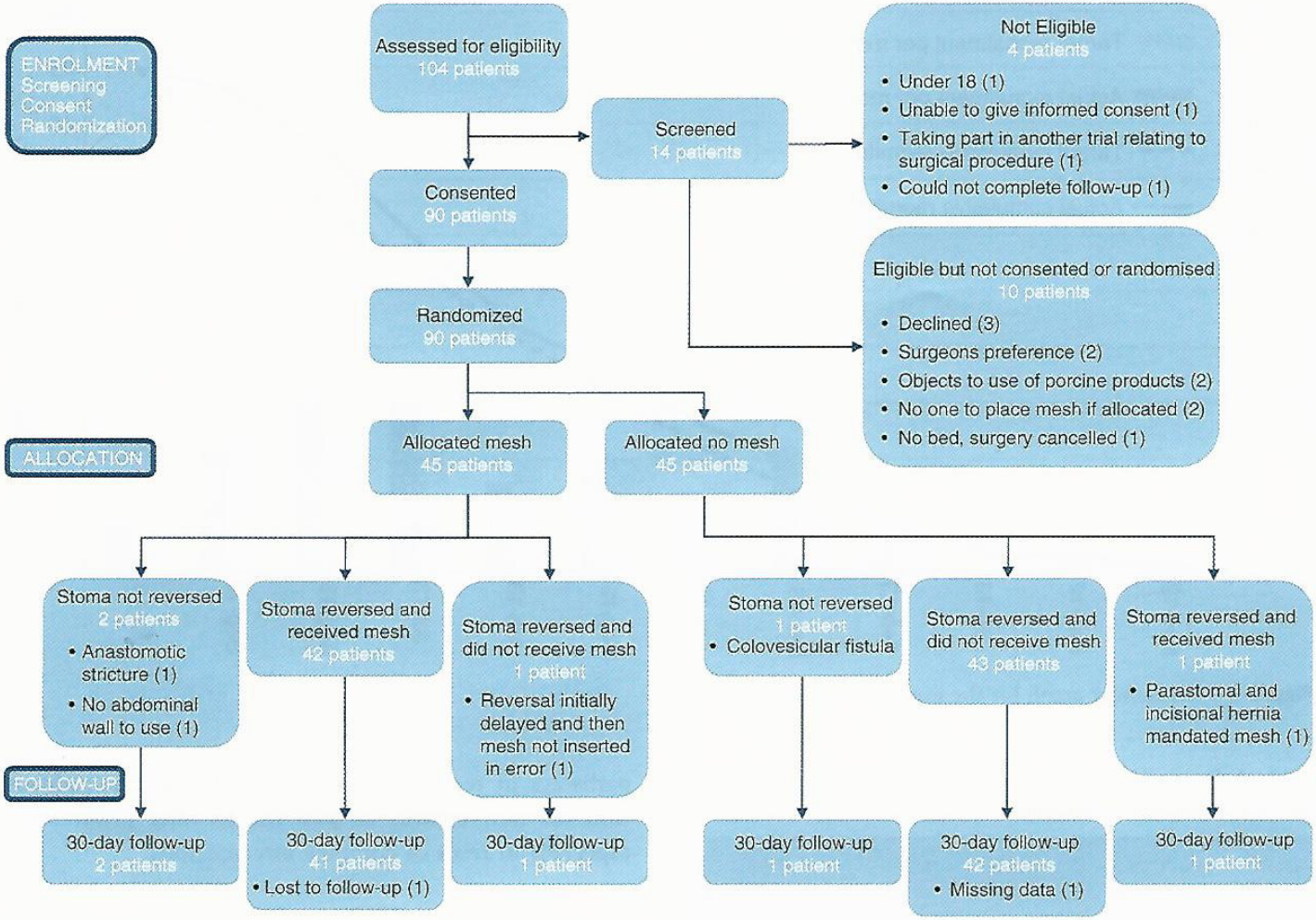


Figure 2 CONSORT flow diagram of patient inclusion.

- **Results:**
  - 104 Pt. Considered for the Trial
  - 90 Consented and Randomized, 14 Excluded
  - 45 To Each arm
  - 12 Months Time
  - A] Mesh Arm: 42/45 received the mesh (93%)
  - B] Non Mesh Arm: 43/45 received the ttt (96%)
  - 31 Post op Adverse events:
    - 13 A
    - 18 **B**
  - Most Common : SSI 9% & Ileus 6%

Table 2 Demographics split by treatment arm. Allocation arms have not been revealed to prevent unblinding.

Baseline data	Arm A ($n = 45$)	Arm B ($n = 45$)	Total ($n = 90$)
Age (years)			
Mean (SD)	57.3 (18.3)	55.4 (16.4)	56.4 (17.3)
Min.–max.	20.0–88.0	19.0–83.0	19.0–88.0
Age group			
≤ 30 years	5 (11.1%)	5 (11.1%)	10 (11.1%)
31–50 years	10 (22.2%)	11 (24.4%)	21 (23.3%)
51–70 years	17 (37.8%)	21 (46.7%)	38 (42.2%)
≥ 71 years	13 (28.9%)	8 (17.8%)	21 (23.3%)
Gender			
Male	27 (60.0%)	34 (75.6%)	61 (67.8%)
Female	18 (40.0%)	11 (24.4%)	29 (32.2%)
Body mass index (kg/m^2)			
Mean (SD)	26.1 (4.9)	28.1 (5.6)	27.1 (5.4)
Min.–max.	16.0–40.0	18.0–49.0	16.0–49.0
Stoma type			
Illeostomy	35 (77.8%)	31 (68.9%)	66 (73.3%)
Colostomy	10 (22.2%)	14 (31.1%)	24 (26.7%)
Closure of skin			
Primary	42 (93.3%)	39 (86.7%)	81 (90%)
Secondary	3 (6.7%)	6 (13.3%)	9 (10.0%)
Disease type			
Malignant	16 (35.6%)	21 (46.7%)	37 (41.1%)
Benign	29 (64.4%)	24 (53.3%)	53 (58.9%)
Stoma opening			
Loop	35 (77.8%)	27 (60.0%)	62 (68.9%)
End	10 (22.2%)	18 (40.0%)	28 (31.1%)
Side stoma closed			
Right	36 (80.0%)	29 (64.4%)	65 (72.2%)
Left	9 (20.0%)	16 (35.6%)	25 (27.8%)
Surgical access to close stoma			
Circumstomal	35 (77.8%)	36 (80.0%)	71 (78.9%)
Midline	10 (22.2%)	9 (20.0%)	19 (21.1%)
Parastomal hernia evident			
No	34 (75.6%)	30 (66.7%)	64 (71.1%)
Yes	11 (24.4%)	15 (33.3%)	26 (28.9%)
Midline incisional hernia			
No	44 (97.8%)	41 (91.1%)	85 (94.4%)
Yes	1 (2.2%)	4 (8.9%)	5 (5.6%)

Demography

Follow Up

Table 3 Thirty-day postoperative surgical adverse events.

Thirty-day postsurgery adverse event	No. of events	No. of patients
Clavien–Dindo 1		
Ileus	5	5
Excess pain	2	2
Rectal bleeding	2	2
Surgical site infection	2	2
Pulmonary atelectasis	1	1
Clavien–Dindo 2		
Surgical site infection	6	6
Pneumonia	3	3
Anastomotic leak	1	1
Bradycardia	1	1
Dehydration	1	1
Hypotension	1	1
Wound pain	1	1
Clavien–Dindo 3b		
Reoperation (anastomotic leak)	1	1
Reoperation (internal hernia)	1	1
Reoperation (*Clostridium difficile* sepsis)	1	1
Reoperation (bleeding from anastomotic staple line)	1	1
Reoperation (intra-abdominal haemorrhage)	1	1
Total	31	31

- **Conclusion:**
  - The “Novel Technique” is widely accepted by surgeons & Patients
  - Adverse Events were Similar between blinded arms
  - No Safety Concerns addressed (DMEC)
  - No early removal required
  - Phase III Trial to recruit from 30 Centers / 2.5 Years

Weakness:

- Numbers (Too Low)
- Follow Up Duration (Too Short)
- Hernia Rate (Main Outcome)

Impact On Our Practice

Any Questions ?!!

Thank You !