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**National prospective cohort study of the burden of acute small bowel obstruction**

M. J. Lee, A. E. Sayers, T. M. Drake, P. J. Marriott, I. D. Anderson, S. P. Bach, M. Bradburn, D. Hind, A. Verjee and N. S. Fearnhead, on behalf of NASBO steering group and NASBO collaborators

**Appendix S1 NASBO Steering Group**

John Abercrombie, Austin Acheson, Derek Alderson, Iain Anderson, Michael Davies, Zaed Hamady, Marianne Hollyman, Sarah Hare, Ellen Lee, John Northover, Christopher Lewis, Malcolm McFall, Aravinth Murugananthan, David Murray, Pritam Singh, Gillian Tierney, Ciaran Walsh, Jonathan Wild, Timothy Wilson

**Appendix S2 NASBO Collaborators**

Abbott S, Abdulaal Y, Afshar S, Ah-Chuen J, Ahmed T, Akhtar M, Akram F, Aldred E, Ali A, Aly M, Amajuoyi A, Amin V, Anderson D, Anderson O, Andreou A, Ansari A, Appleton S, Ardley R, Arshad F, Ashour O, Asour A, Athem A, Athersmith M, Ayoub F, Azeem H, Azhar B, Badenoch T, Baillie C, Bandyopadhyay D, Barker J, Barker S, Barkham B, Baron R, Barrie J, Barry-Yarrow E, Bashir G, Battersby N, Bazoua G, Behar N, Bellam S, Berger C, Bhandari S, Bhasin S, Biggs S, Bisset C, Blake L, Blencowe N, Boam T, Boddy A, Boereboom C, Bogdan M, Bogle R, Bohra P, Boland M, Bolkan H, Borg C, Boulton R, Bouras G, Boyer M, Boyle J, Branagan G, Brewer H, Briggs C, Broadhurst J, Brown E, Brown J, Brown L, Brown O, Burns K, Butcher K, Butler M, Byrne B, Campbell L, Capper C, Cartmell M, Cash T, Chan S, Chandratreya N, Chapman J, Chapman S, Charalabopoulos A, Cheek C, Chok S, Choong W, Chow M, Chowdhury J, Coe P, Conaghan P, Conn G, Cook N, Cook T, Cooper S, Cornish J, Cotton D, Cox C, Coyne P, Crook R, Crozier J, Cuffolo G, Cunha P, Curtis N, Cutting J, Da Costa K, da Silva L, Das B, Davenport M, Davies J, Davies T, Day A, Dayal S, Dean S, Demetriou G, Dengu F, Dennis R, Dent H, Dent P, Deputy M, Devoto L, Di Benedetto G, Dindyal S, Donnelly E, Doody P, Douka E, Downham C, Dowson H, Edent H, Edgerton K, Ekpete N, El Farran M, Elamin O, Eljaafari M, Elsaid N, El-Sharif M, Evans J, Evans M, Ewe R, Ewing A, Exarchou K, Fallaize R, Faoury M, Farag S, Farinella E, Faulkner G, Ferguson H, Fisher O, Fletcher J, Forouzanfar A, Foster A, Fox R, Francis N, Fretwell V, Fung D, Gammeri E, Garnham J, Geraghty A, Gilbert A, Gill C, Gill M, Gillespie M, Giordano P, Glasbey J, Goh M, Golder A, Green N, Gregoir T, Grey T, Groundwater E, Grove T, Growcott S, Gunasekaran S, Habib H, Haddow J, Halahakoon V, Halkias C, Hall C, Hampson A, Hancock L, Hanna T, Hannay J, Harikrishnan A, Harries R, Harris G, Hartley J, Harvey K, Hawkin P, Hawkins J, Healy R, Heard R, Heartshorne R, Heller S, Hendra L, Herrod P, Heywood N, Hicks G, Hobson B, Holtham S, Holtham S, Hope C, Hopley P, Hossain T, Hossaini S, Howse F, Hubbard T, Humphreys A, Ikram H, Ioannis M, Iqbal M, Iqbal N, Jain R, Jatania J, Jenkinson P, Jokhan S, Jones A, Jones C, Jones L, Joshi H, Joshi K, Joy M, Jull P, Kakaniaris G, Kakaniaris G, Kallam R, Kane E, Kang P, Kanitkar R, Kauser S, Kazmi F, Kedrzycki M, Kelly S, Kendall J, Khan M, Khan T, King G, Kisiel A, Kitsis C, Kolawole I, Korambayil S, Kosasih S, Kosti A, Kotb A, Kouris S, Kshatriya K, Kumar S, Lafaurie G, Lal R, Lau A, Lazim T, Lazim T, Lazzaro A, Lee K, Lefroy R, Leinhardt D, Leinhardt D, Lennon H, Leong K, Levy B, Lim E, Lim J, Lindley S, Liu D, Lloyd P, Locker D, Lockwood S, Lowe C, Lund J, Lunevicius R, Lunt A, Lutfi S, Luther A, Luwemba S, Mahankali-Rao P, Mahroof S, Mai D, Majid S, Malik A, Malik K, Mann K, Mansour S, Manu N, Mapara R, Martin C, Martin J, Martin R, Mason C, Massey L, Mathias J, Mathur P, Maude K, McArthur D, McCain S, McCluney S, McIlroy B, McKay S, McKinley N, McNair A, McWhirter D, Mekhail P, Mellor K, Merchant J, Merker L, Messenger D, Miles A, Mir S, Mishra A, Mistry P, Miu V, Moat M, Mockford K, Mohamed E, Mohamed I, Mondragon-Pritchard M, Moore N, Moretti L, Morris H, Morrison T, Morrison-Jones V, Moss J, Moug S , Mountford D, Moynihan R, Muhammad K, Muldoon-Smith D, Mulholland J, Mullan M, Murgitroyd E, Murugaiyan K, Myers A, Mykoniatis I, Nana G, Nash T, Nassar A, Newton R, Ng C, Ng P, Ng P, Nguyen K, Nguyen K, Nicholas F, Noor M, Nowers J, Nugent C, Nunn A, Nunn R, Obeid N, O'Callaghan J, O'Hara R, Oke O, Olivier J, O'Neill A, O'Neill S, Osei-Bordom D, Osgood L, Panagiotopoulos S, Panchasara B, Parks R, Patel H, Patel P, Patel R, Patel S, Pawelec K, Payne C, Pearson K, Perin G, Peristerakis I, Petronio B, Phelan L, Phillips J, Pisaneschi C, Pitt J, Plunkett-Reed K, Ponchietti L, Pouzi A, Pouzi M, Powell A, Powell-Chandler A, Pranesh N, Proctor V, Pywell S, Qureshi A, Qureshi N, Rahman M, Rai Z, Ramcharan S, Rangarajan K, Rashid M, Reader H, Rehman A, Rehman S, Rengifo C, Richards E, Richardson N, Robinson A, Robinson D, Rossi B, Rutherford F, Sadien I, Saghir T, Sahnan K, Salahia G, Sarveswaran J, Saunders M, Scott B, Scott K, Seager A, Seal S, Sezen E, Shaban F, Shah P, Shah P, Shahmohammadi M, Shamsiddinova A, Shankar S, Sharpe A, Shatkar V, Sheel A, Shields T, Shinkwin M, Shurmer J, Siddika A, Siddiqui S, Simson R, Sinclair P, Singh B, Singh S, Sivaraj J, Skaife P, Skelly B, Skinner A, Slim N, Smart C, Smart N, Smith F, Smith I, Smith R, Spence G, Sreedhar A, Steinke J, Stevenson L, Stewart-Parker E, Stott M, Stubbs B, Stubbs B, Stylianides N, Subramonia S, Swinkin M, Swinscoe M, Symons N, Tahir W, Taj T, Takacs K, Tam J, Tan K, Tani S, Tanner N, Tao D, Taylor M, Thava B, Thippeswamy K, Thomas C, Thompson E, Thompson R, Thompson-Reil C, Thorn C, Tongo F, Toth G, Turnbull A, Turnbull J, Valero C, van Boxel G, Varcada M, Venn M , Ventham N, Venza M, Vimalachandran D, Virlos I, Wade T, Wafi A, Waite K, Walker M, Walker N, Walker T, Walsh U, Wardle S, Warner R, Watfah J, Watson N, Watt J, Watts J, Wayman J, Weegenaar C, West H, West M, Whitehurst L, Whyler M, Wiggans M, Wijeyekoon S, Williams G, Williams R, Williamson A, Williamson J, Wilson J, Winter A, Wolpert L, Wong J, Yeap E, Yeong T, Zaman S, Zappa B, Zosimas D, West Midlands Research Collaborative.

**Appendix S3 Collaborator contributions**

**Site lead**

Abbott S, Abdulaal Y, Afshar S, Akhtar M, Anderson D, Appleton S, Bandyopadhyay D, Bashir G, Behar N, Bhandari S, Branagan G, Boulton R, Borg C, Bouras G, Boyle J, Brewer H, Brown L, Briggs C, Cartmell M, Chan S, Chandratreya N, Conaghan P, Cornish J, Cotton D, Coyne P, Crozier J, Cook T, Cunha P, Curtis N, Day A, Dayal S, Dennis R, Dent P, Dowson H, Fallaize R, Farag S, El Farran M, Faulkner G, Giordano P, Grey T, Halahakoon V, Hannay J, Harikrishnan A, Holtham S, Hawkin P, Hall C, Hancock L, Hartley J, Howse F, Kallam R, Kakaniaris G, Kelly S,Lockwood S,Leinhardt D, Levy B,Lal R, Lazim T,Lund J, Lunevicius R,Mathur P, Maude K, McArthur D, McIlroy B, Miles A, Moug S Mondragon-Pritchard M, Messenger D, Mullan M, Myers A, Muhammad K, Mason C,Sarveswaran J, Shatkar V, Singh B, Skelly B, Subramonia S, Swinscoe M, Thava B, Thorn C,Panagiotopoulos S, Patel P, Phillips J, Peristerakis I, Qureshi A,Saunders M, Shah P, Sheel A, Siddiqui S, Skaife P,Smart N, Smith I, , Stevenson L, Stylianides N,Steinke J, Stubbs B,Thompson R,Varcada M, Vimalachandran D, Virlos I, Watfah J, Watson N, Walker M, Ventham N, West H, Wilson J, Wijeyekoon S

**Local Collaborator**

Ah-Chuen J, Ahmed T, Akram F, Aldred E, Ali A, Aly M, Amajuoyi A, Amin V, Andreou A, Ansari A, Ardley R, Arshad F, Ashour O, Asour A, Ayoub F, Azeem H, Azhar B, Baillie C, Barker J, Barkham B, Baron R, Barrie J, Barry-Yarrow E, Battersby N, Bazoua G, Berger C, Bhasin S, Biggs S, Bisset C, Blencowe N, Boddy A, Boereboom C, Bogdan M, Bogle R, Bohra P, Bolkan H, Boyer M, Broadhurst J, Brown E, Brown J, Burns K, Butcher K, Capper C, Cash T, Chapman J, Chapman S, Charalabopoulos A, Cheek C, Chok S, Choong W, Chowdhury J, Coe P, Conn G, Cook N, Cooper S, Cox C, Crook R, Cuffolo G, , da Silva L, Das B, Davenport M, Davies J, Davies T, Dean S, Demetriou G, Dengu F, Dent H, Di Benedetto G, Dindyal S, Donnelly E, Douka E, Downham C, Edent H, Edgerton K, El-Sharif M, Elamin O, Elsaid N, Evans J, Evans M, Ewe R, Ewing A, , Ferguson H, Fisher O, Fletcher J, Forouzanfar A, Foster A, Fox R, Francis N, Fretwell V, Fung D, Gammeri E, Garnham J,Geraghty A, Gilbert A, Gill M, Gillespie M, Glasbey J, Golder A, Green N, Groundwater E, Grove T, Habib H, Haddow J, , Halkias C, Hampson A, Hanna T, Harries R, Harvey K, Hawkins J, Healy R, Heartshorne R, Heller S, Hendra L, Herrod P, Heywood N, Hicks G, Ng P, Holtham S, Hope C, Hopley P, Hossain T, Hossaini S, Hubbard T, Humphreys A, Ikram H, Ioannis M, Iqbal M, Jatania J, Jenkinson P, Jokhan S, Jones A, Jones C, Jones L, Joshi H, Joshi K, Joy M, Jull P, Kakaniaris G, Kane E, Kanitkar R, Kauser S, Kazmi F, Kedrzycki M, Kendall J, Khan T, King G, Kisiel A, Kitsis C, Kolawole I, Kosasih S, Kosti A, Kotb A, Lau A, Lafaurie G, Lazim T, Lazzaro A, Lefroy R, Leinhardt D, Lennon H, Leong K, Lim E, Lim J, Lindley S, Liu D, Lloyd P, Locker D, Lowe C, Lunt A, Lutfi S, Luther A, Luwemba S, Mahankali-Rao P, Mai D, Majid S, Malik A, Manu N, Mapara R, Martin C, Martin J, Massey L, Mathias J, McCain S, McCluney S, McNair A, Mekhail P, Merchant J, Merker L, Mir S, Mistry P, Miu V, Moat M, Mohamed E, Mohamed I, Moore N, Moretti L, Morris H, Morrison T, Moss J, , Mountford D, Moynihan R, Muldoon-Smith D, Mulholland J, Murgitroyd E, Murugaiyan K, Mykoniatis I, Nana G, Nash T, Nassar A, Newton R, Ng P, Nguyen K, Nguyen K, Nicholas F, Noor M, Nowers J, Nugent C, Nunn A, , O'Callaghan J, O'Hara R, O'Neill A, Olivier J, Osei-Bordom D, Osgood L, Panchasara B, Parks R, Patel H, Pawelec K, Payne C, Pearson K, Perin G, Petronio B, Phelan L, Pisaneschi C, Pitt J, Ponchietti L, Powell A, Powell-Chandler A, Pranesh N, Proctor V, Qureshi N, Rahman M, Rai Z, Ramcharan S, Rangarajan K, Rashid M, Reader H, Rehman A, Rehan S, Rengifo C, Richardson N, Robinson A, Robinson D, Rossi B, Rutherford F, Sadien I, Saghir T, Sahnan K, Salahia G, Scott B, Scott K, Seager A, Seal S, Sezen E, Shaban F, Shah P, Shahmohammadi M, Shamsiddinova A, Shankar S, Sharpe A, Shields T, Shinkwin M, Shurmer J, Siddika A, , Simson R, Singh S, Sivaraj J, Skinner A, Smart C, Smith F, Smith R, Sreedhar A, Stewart-Parker E, Stott M, Stubbs B, , Symons N, Taj T, Tam J, Tan K, Tani S, Tao D, Thippeswamy K, Thomas C, Thompson E, , Thompson-Reil C, Tongo F, Toth G, Turnbull A, Turnbull J, Wade T, Wafi A, Waite K, Walker N, Walker T, Walsh U, Wardle S, Warner R, Watt J, Watts J, Wayman J, , Weegenaar C, West M, Whyler M, Whitehurst L, Wiggans M, Williams G, Williams R, Williamson A, Williamson J, Winter A, Wolpert L, Wong J, van Boxel, G, Yeap E, Zaman S, Zappa B, Zosimas D

**Validators**

Anderson O, Athem A, Athersmith M, Badenoch T, Barker S, Bellam S, Boam T, Boland M, Blake L, Brown O, Butler M, Byrne B, Campbell L, Chow M, Da Costa K, Cutting J, Deputy M, Devoto L, Doody P, Ekpete N, Eljaafari M, Exarchou K, Faoury M, Farinella E, Gill C, Goh M, Gregoir T, Growcott S, Gunasekaran S, Harris, G, Heard R, Hobson B, Iqbal N, Jain R, Kang P, Khan M, Korambayil S, Kouris S, Kshatriya K, Kumar S, Lee K, Mahroof S, Malik K, Mann K, Mansour S, Martin R, McKay S, McKinley N, McWhirter D, Mellor K, Mishra A, Mockford K, Morrison-Jones V, Ng C, Nunn R, O'Neill S, Oke O, Obeid N, Patel R, Patel S, Plunkett-Reed K, Pouzi M, Pywell S, Richards E, Sinclair P, Slim N, Spence G, Swinkin M, Tahir W, Takacs K, Tanner N, Taylor M, Valero C, Venn M , Venza M, Yeong T,

**Appendix S4 Data fields captured**

|  |  |
| --- | --- |
| Field | Options (definitions) |
| Age | In years |
| Height | In centimetres, |
| Weight | In kilograms |
| Sex | Male, Female |
| Comorbidities | Myocardial infarct Congestive heart failure Peripheral vascular disease Cerebrovascular disease (except hemiplegia) Dementia Chronic pulmonary disease Connective tissue disease Peptic ulcer disease Mild liver disease Diabetes (without complications) Diabetes with end organ damage Hemiplegia (or paraplegia) Moderate or severe renal disease Solid tumour (non-metastatic) Leukaemia Lymphoma, Multiple Myeloma... Moderate or severe liver disease Metastatic solid tumour AIDS |
| Source of referral | Emergency DepartmentGeneral PracticeSurgical Clinic admissionReferral from inpatient team |
| Where was the patient living prior to admission to the hospital? | Own Home/Sheltered AccommodationResidential HomeNursing Home |
| Date admitted to hospital | Day/Month/Year |
| Date first seen by a member of the surgical team  | Day/Month/Year |
| Date of last enteral intake  | Day/Month/Year |
| Initial management strategy | Conservative Operative (Palliative  |
| White Cell Count |  |
| C-Reactive Protein |  |
| Albumin |  |
| Did the patient have an AKI at admission?  | Yes / No |
| Was the patient identified as being malnourished, or at risk of malnourishment? | Yes / NoDay/Month/Year |
| How was this identified? |  |
| Was the patient reviewed by a dietitian or nutrition team during admission? | Yes / No |
| Were oral supplements (e.g. fortisips) started at any point started at any point during admission? | Yes / NoDay/Month/Year |
| Was NG or NJ feed started during admission? | Yes / NoDay/Month/Year |
| Was TPN started during the admission? | Yes / NoDay/Month/Year |
| If TPN was used, when was it stopped? | Day/Month/Year |
| Was intravenous access established for nutrition? | Yes / No |
| What type of line was initially used? | Peripheral cannulaPeripherally inserted central catheter (PICC)Central venous catheter (CVC/Central line)Hickmann line |
| What date was this inserted? | Day/Month/Year |
| Did the patient develop line sepsis related to this line? | Yes / No |
| Date line sepsis diagnosed | Day/Month/Year |
| Abdominal X-ray performed | Yes / NoDay/Month/Year |
| CT scan performed | Yes / NoDay/Month/Year |
| Did the patient receive water-soluble contrast agent (gastrografin) apart from when undergoing a CT scan?  | Yes / NoDay/Month/Year |
| Aetiology | Congenital band adhesionPost-operative adhesionsRight sided colon cancerCrohn’s diseaseDisseminated intra-abdominal malignancyIncarcerated Hernia - GroinIncarcerated hernia - MidlineIncarcerated hernia - IncisionalIncarcerated Hernia - ParastomalSmall bowel VolvulusOther\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Did the patient undergo an operation/procedure for SBO? | Yes / NoDay/Month/Year |
| American Society of Anesthesiologist (ASA) score | Classified as:1. A normal healthy patient
2. A patient with mild systemic disease
3. A patient with severe systemic disease
4. A patient with severe systemic disease that is a constant threat to life
5. A moribund patient who is not expected to survive without the operation
 |
| Method of operation | LaparoscopicLap converted to openOpen (midline)Open (groin)Open (other) |
| What intervention? | Division (single) band adhesion AdhesiolysisHernia repairSmall bowel resectionLarge bowel resectionFormation jejunostomyFormation ileostomyAnastomosis of bowelOther  |
| Date resumed enteral nutrition  | Day/Month/Year |
| In hospital death  | Yes / No |
| Date patient medically fit for discharge:  | Day/Month/Year |
| Date of discharge | Day/Month/Year |
| Readmitted within 30-days post discharge  | Yes / No |
| Discharge destination  | Own Home/Sheltered Accommodation Rehabilitation Unit Residential Home Nursing Home Hospice Still acute inpatient on 30/4/17 Deceased  |
| In hospital complications | UTIPneumoniaCardiacPE/DVTDeliriumSuperficial surgical site infectionIntra abdominal sepsisAbdominal wall dehiscenceAnastomotic leakRadiological drainReoperationUnplanned HDU/ITU admission |

**Appendix S5 Definition of complications**

**In-hospital mortality –**  Death occurring in the same hospital admission as treatment for small bowel obstruction.

**Urinary Tract Infection**: Patient has at least one of the following signs or symptoms: fever (>38.0°C); suprapubic tenderness; costovertebral angle pain or tenderness; urinary urgency; urinary frequency; dysuria AND Patient has a urine culture with no more than two species of organisms identified, at least one of which is a bacterium of ≥105 CFU/ml.

**Pneumonia** must meet one of the criteria 1. Rales or dullness to percussion on physical examination of chest and any of the following: new onset of purulent sputum or change in character of sputum; organism isolated from blood culture; isolation of pathogen from specimen obtained by transtracheal aspirate, bronchial brushing or biopsy. 2. Chest radiographic examination shows new or progressive infiltrate, consolidation, cavitation or pleural effusion and any of the following: new onset of purulent sputum or change in character of sputum; organism isolated from blood culture; isolation of pathogen from specimen obtained by transtracheal aspirate, bronchial brushing or biopsy; isolation of virus or detection of viral antigen in respiratory secretions; diagnostic single antibody titre (IgM) or four-fold increase in paired serum samples (IgG) for pathogen.

**Cardiac:** All complications newly diagnosed whilst inpatient (e.g. AF, MI, etc). DVT/PE – Radiologically confirmed whilst inpatient. Delirium – acute confusional state with change from the patient’s normal cognitive baseline.

**Superficial surgical site infection**: 1) Purulent drainage from the incision; OR (2) At least two of: pain or tenderness; localised swelling; redness; heat; fever; AND incision opened deliberately to manage infection or the clinician diagnoses a SSI; OR (3) Wound organisms AND pus cells from aspirate/ swab.

**Deep (intra-abdominal) surgical site infection**: (1) A clinical diagnosis of wound infection with dehiscence of mass closure or any layer below fat/scarpa’s fascia; (2) A clinical diagnosis of intra-abdominal collection (fever/abdominal pain) with operative/radiological evidence of a collection.

**Abdominal Wall Dehiscence:** Full thickness dehiscence of laparotomy wound whilst inpatient.

**Anastomotic leakage:** A clinical diagnosis will require symptoms related to leakage (gas, pus or faecal discharge from the drainage site, peritonitis or discharge of pus from the rectum). In the event of a clinically suspicious leak (fever or abdominal pain) the diagnosis can be established by operative or radiological diagnosis. When an anastomosis is defunctioned the presence or absence of a leak will be established by contrast radiology.

**Radiological drain:** Any additional procedure after operation, including imaging guided aspiration of collection or placement of a drain.

**Reoperation:** Any return to theatre for a general surgical cause whilst inpatient.

**Unplanned HDU/ITU admission:** any unplanned episodes even if unrelated to primary presentation. Does not include patients admitted directly from operating theatre.

**Table S1 Aetiologies of Small Bowel Obstruction**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Non-operative (1,148) | Immediate operation (693) | Delayed operation (500) |
| Anastomotic stricture | 5 (0.4) | 1 (0.1) | 2 (0.4) |
| Congenital Adhesions | 23 (2.0) | 71 (10.2) | 31 (6.2) |
| Crohns disease | 65 (5.7) | 16 (2.3) | 24 (4.8) |
| Disseminated malignancy | 75 (6.5) | 21 (3.0) | 30 (6.0) |
| Gallstone ileus | 3 (0.3) | 18 (2.6) | 10 (2.0) |
| Hernia - groin | 18 (1.6) | 117 (16.9) | 22 (4.4) |
| Hernia - incisional | 35 (3.0) | 58 (8.4) | 16 (3.2) |
| Hernia - midline | 17 (1.5) | 66 (9.5) | 9 (1.8) |
| Hernia - parastomal | 38 (3.3) | 18 (2.6) | 13 (2.6) |
| Hernia - other | 3 (0.3) | 16 (2.3) | 3 (0.6) |
| Inflammation | 8 (0.7) | 4 (0.6) | 2 (0.4) |
| Intra-abdominal infection | 15 (1.3) | 27 (3.9) | 7 (1.4) |
| Intussusception | 0 (0.0) | 5 (0.7) | 1 (0.2) |
| Post-operative Adhesions | 767 (66.8) | 144 (20.8) | 261 (52.2) |
| Primary neoplasm | 11 (1.0) | 48 (6.9) | 26 (5.2) |
| Radiotherapy | 5 (0.4) | 2 (0.3) | 2 (0.4) |
| Other | 35 (3.0) | 57 (8.2) | 38 (7.6) |
| Unknown | 25 (2.2) | 2 (0.3) | 3 (0.6) |
| Missing | 0 (0.0) | 2 (0.3) | 0 (0.0) |

Data are presented as N (%).

**Table S2 Procedures performed for small bowel obstruction**

|  |  |  |
| --- | --- | --- |
|  | Immediate operation (n = 693) | Delayed operation (n = 500) |
| Adhesiolysis (multiple adhesions) | 49 (7.1) | 40 (8.0) |
| Division single band adhesion | 90 (13.0) | 155 (31.0) |
| Formation ileostomy | 96 (13.9) | 57 (11.4) |
| Formation jejunostomy | 5 (0.7) | 8 (1.6) |
| Hernia repair | 10 (1.4) | 19 (3.8) |
| Laparotomy/ laparoscopy only | 3 (0.4) | 1 (0.2) |
| Large bowel resection | 25 (3.6) | 18 (3.6) |
| Primary anastomosis - no resection | 67 (9.7) | 50 (10.0) |
| Small bowel resection | 5 (0.7) | 3 (0.6) |
| Small bowel resection with formation ileostomy | 12 (1.7) | 7 (1.4) |
| Small bowel resection with formation jejunostomy | 53 (7.6) | 28 (5.6) |
| Small bowel resection with primary anastomosis | 172 (24.8) | 51 (10.2) |
| Other procedure | 89 (12.8) | 59 (11.8) |
| Missing | 17 (2.5) | 4 (0.8) |

Data are presented as N (%).