

COMPARATIVE EFFECTIVENESS AND SAFETY OF TOFACITINIB, FILGOTINIB, AND UPADACITINIB IN ULCERATIVE COLITIS: A MULTICENTER REAL-WORLD COHORT STUDY

Antonio TURSI^{1,2}, Andrea PASTA³, Walter ELISEI⁴, Brigida BARBERIO⁵, Giammarco MOCCI⁶, Edoardo V. SAVARINO⁵, Caterina DE BARBA⁵, Giovanni MACONI⁷, Giovanni CATALETTI⁷, Franco SCALDAFERRI^{8,9}, Daniele NAPOLITANO⁸, Francesco COSTA¹⁰, Linda CECCARELLI¹⁰, Manuela MARZO¹¹, Rita MONTERUBBIANESI⁴, Michela DI FONZO⁴, Giovanni LOMBARDI¹², Marta PATTURELLI¹², Davide Giuseppe RIBALDONE¹³, Lorenzo BERTANI¹⁴, Stefano RODINO¹⁵, Ladislava SEBKOVA¹⁵, Giorgia BODINI³, Giuseppe PRANZO¹⁶, Mariaelena SERIO¹⁷, Antonella SCARCELLI¹⁷, Ileana LUPPINO¹⁸, Antonio FERRONATO¹⁹, Rocco SPAGNUOLO²⁰, Francesco LUZZA²⁰, Domenico MORANO²⁰, Antonietta Gerarda GRAVINA²¹, Raffaele PELLEGRINO²¹, Giuliana VESPERE²², Silvia SEDDA²², Leonardo ALLEGRETTA²³, Libera FANIGLIULO²⁴, Laurino GROSSI²⁵, Fabio CORTELLINI²⁶, Giacomo FORTI²⁷, Viviana NEVE²⁸, Simona PIERGALLINI²⁹, Patrizio SCAROZZA³⁰, Girolamo BEVEVINO³⁰, Federico IACOPINI³⁰, Pietro CAPONE³¹, Federica GAIANI³², Stefano KAYALI³², Caterina MUCHERINO³³, Elvira D'ANTONIO³³, Berardino D'ASCOLI³⁴, Raffaele COLUCCI³⁵, Francesco BACHETTI³⁵, Gian Marco GIORGETTI³⁶, Valeria CLEMENTE³⁶, Cristiano PAGNINI³⁷, Antonio CUOMO³⁸, LAURA DONNARUMMA³⁸, Francesca Maria ONIDI⁶, Paolo USAI SATTA⁶, Marcello PICCHIO³⁹, Alfredo PAPA^{8,9}; Italian Network for Inflammatory Bowel Diseases (IN-IBD)*

¹ Territorial Gastroenterology Service, ASL BAT, Andria, Italy

² Department of Medical and Surgical Sciences, Catholic University, School of Medicine, Rome, Italy

³ Department of Internal Medicine and Medical Specialties, Division of Gastroenterology, IRCCS "San Martino" Hospital, University of Genoa, Genoa, Italy

⁴ Division of Gastroenterology, A.O. "S. Camillo-Folanini", Rome, Italy

⁵ Gastroenterology Unit, Azienda Ospedale-Università di Padova (AOUP), Padua, Italy

⁶ Division of Gastroenterology, AORN "Brotzu" Hospital, Cagliari, Italy

⁷ Gastroenterology Unit, Department Biomedical and Clinical Sciences, "L. Sacco" University Hospital, Milan, Italy

⁸ Digestive Diseases Centre (CEMAD), Department of Medical and Surgical Sciences, Policlinico Universitario "A. Gemelli" Foundation, IRCCS, Rome, Italy

⁹ Catholic University, School of Medicine, Rome, Italy

¹⁰ IBD Unit, Department of General Surgery and Gastroenterology, Pisa University Hospital, Pisa, Italy

¹¹ Division of Gastroenterology, "Veris-Delli Ponti" Hospital, Scorrano (LE), Italy,

¹² Division of Gastroenterology, AORN "Cardarelli", Naples, Italy

¹³ Department of Medical Sciences, Division of Gastroenterology, University of Turin, IBD Unit, "A.O.U. Città della Salute e della Scienza di Torino", Turin, Italy

¹⁴ Division of Gastroenterology, "Felice Lotti" Hospital, Azienda USL Toscana Nord Ovest, Pontedera (PI), Italy

¹⁵ Division of Gastroenterology, "Ciaccio-Pugliese" Hospital, Catanzaro, Italy

¹⁶ Ambulatory for IBD Treatment, "Valle D'Itria" Hospital, Martina Franca (TA), Italy

- ¹⁷ Division of Gastroenterology, “San Salvatore” Hospital, Pesaro, Italy
- ¹⁸ Division of Gastroenterology, “Annunziata” Hospital, Cosenza, Italy
- ¹⁹ Digestive Endoscopy Unit, ULSS7 Pedemontana, Santorso (VI), Italy
- ²⁰ Department of Health Science, University of Catanzaro, Catanzaro, Italy
- ²¹ Department of Precision Medicine, Hepatogastroenterology and Digestive Endoscopy Unit, University of Campania “Luigi Vanvitelli”, Naples, Italy
- ²² Division of Gastroenterology, “Ospedale del Mare”, ASL Na1, Naples, Italy
- ²³ Division of Gastroenterology, “Santa Caterina Novella” Hospital, Galatina (LE), Italy
- ²⁴ Division of Gastroenterology, “S.S. Annunziata” Hospital, Taranto, Italy
- ²⁵ Gastroenterology Unit, “Spirito Santo” Hospital, “G d’Annunzio” University, Pescara, Italy
- ²⁶ Division of Gastroenterology, “Infermi” Hospital, Rimini, Italy
- ²⁷ Division of Digestive Endoscopy, “S. Maria Goretti” Hospital, Latina, Italy
- ²⁸ Division of Gastroenterology, “A. Perrino” Hospital, Brindisi, Italy
- ²⁹ Division of Gastroenterology, IBD Unit, “A. Murri” Hospital, Fermo, Italy
- ³⁰ Division of Gastroenterology, “Ospedale dei Castelli”, Ariccia (Roma), Italy
- ³¹ Division of Gastroenterology, “T. Maresca” Hospital, Torre del Greco (NA), Italy
- ³² Gastroenterology and Endoscopy Unit, Department of Medicine and Surgery, University of Parma, Parma, Italy
- ³³ Division of Gastroenterology, Azienda Ospedaliera “S. Anna e S. Sebastiano”, Caserta, Italy
- ³⁴ Division of Gastroenterology, “Madonna delle Grazie” Hospital, Matera, Italy
- ³⁵ Digestive Endoscopy Unit, “San Matteo degli Infermi” Hospital, Spoleto (PG), Italy
- ³⁶ Clinical Nutrition and Digestive Endoscopy Unit, “S. Eugenio” Hospital, Rome, Italy
- ³⁷ Division of Gastroenterology, “S. Giovanni - Addolorata” Hospital, Rome, Italy
- ³⁸ Division of Gastroenterology, “Umberto I” Hospital, Nocera Inferiore (SA), Italy
- ³⁹ Division of General Surgery, “P. Colombo” Hospital, ASL Roma 6, Velletri (Roma), Italy

* The members of the Italian Network for Inflammatory Bowel Diseases (IN-IBD) are listed as collaborators.

Collaborators: *Italian Network for Inflammatory Bowel Diseases (IN-IBD):

Greta Lorenzon, Fabiana Zingone: UOC di Gastroenterologia, Dipartimento di Scienze Chirurgiche, Oncologiche e Gastroenterologiche, Università di Padova, Azienda Ospedaliero-Universitaria “Sant’Antonio”, Padova; **Davide Checchin:** UOC di Gastroenterologia, Ospedale “S. Giovanni e Paolo”, Mestre – Venezia; **Carla Felice:** UOC di Medicina Interna, Ospedale Universitario “Ca’ Foncello”, Treviso; **Gabrio Bassotti, Elisabetta Antonelli:** Sezione di Gastroenterologia ed Epatologia, Dipartimento di Medicina, Ospedale “Santa Maria della Misericordia”, Perugia; **Costantino Zampalatta, Giulia Rocco, Carlotta Sacchi:** UOC di Gastroenterologia, Ospedale “Belcolle”, Viterbo; **Roberto Faggiani:** UOC di Gastroenterologia ed Endoscopia Digestiva, A.O. “S. Camillo-Forlanini”, Roma; **Maria Giovanna Graziani, Maria Carla Di Paolo:** UOC di Gastroenterologia ed Endoscopia Digestiva, A.O. “S. Giovanni - Addolorata”, Roma; **Roberta Pica, Maddalena Zippi, Andrea Cocco, Claudio Cassieri:** UOC di Gastroenterologia ed Endoscopia Digestiva, Ospedale “S. Pertini”, Roma; **Roberto Lorenzetti:** UOC di Gastroenterologia, Ospedale Territoriale “Nuovo Regina Margherita”, Roma; **Giulia Zerboni:** UOC di Gastroenterologia ed Endoscopia Digestiva, “Ospedale dei Castelli”, Ariccia (Roma); **Serafina Fiorella:** UOSD di Gastroenterologia ed Endoscopia Digestiva, Ospedale “P. Pio”, Vasto (CH); **Vittorio D’Onofrio, Leonardo De Luca:** UOC di Gastroenterologia, “Ospedale del Mare” ASL NA1 Centro, Napoli; **Laura Montesano:** UOC di Gastroenterologia, Azienda Ospedaliera “S. Anna e S. Sebastiano”, Caserta; **Guido Daniele Villani:** UOC di Gastroenterologia ed Endoscopia Digestiva, Ospedale “T. Maresca”, Torre del Greco (NA); **Nicola Della Valle:** UOC di Gastroenterologia, A.O. “Ospedali Riuniti”, Foggia; **Paolo Tonti:** UOSD di Gastroenterologia ed Endoscopia Digestiva, Ospedale “A. Perrino”, Brindisi; **Alessia Immacolata Cazzato, Stefano**

Scorza, Giuseppina Grasso: UOC di Gastroenterologia ed Endoscopia Digestiva, Ospedale “Santa Caterina Novella”, Galatina (LE); **Domenico Catarella, Dario D’Agostino, Elisabetta Di Bartolo:** UOC di Gastroenterologia, ARNAS “Garibaldi”, Catania.

Address for correspondence:

Alfredo PAPA, MD, PhD

Digestive Diseases Centre (CEMAD), Department of Medical and Surgical Sciences, Policlinico Universitario “A. Gemelli” Foundation, IRCCS

Largo Francesco Vito, 1

00168 Rome, Italy

Tel.: +39-06-30151

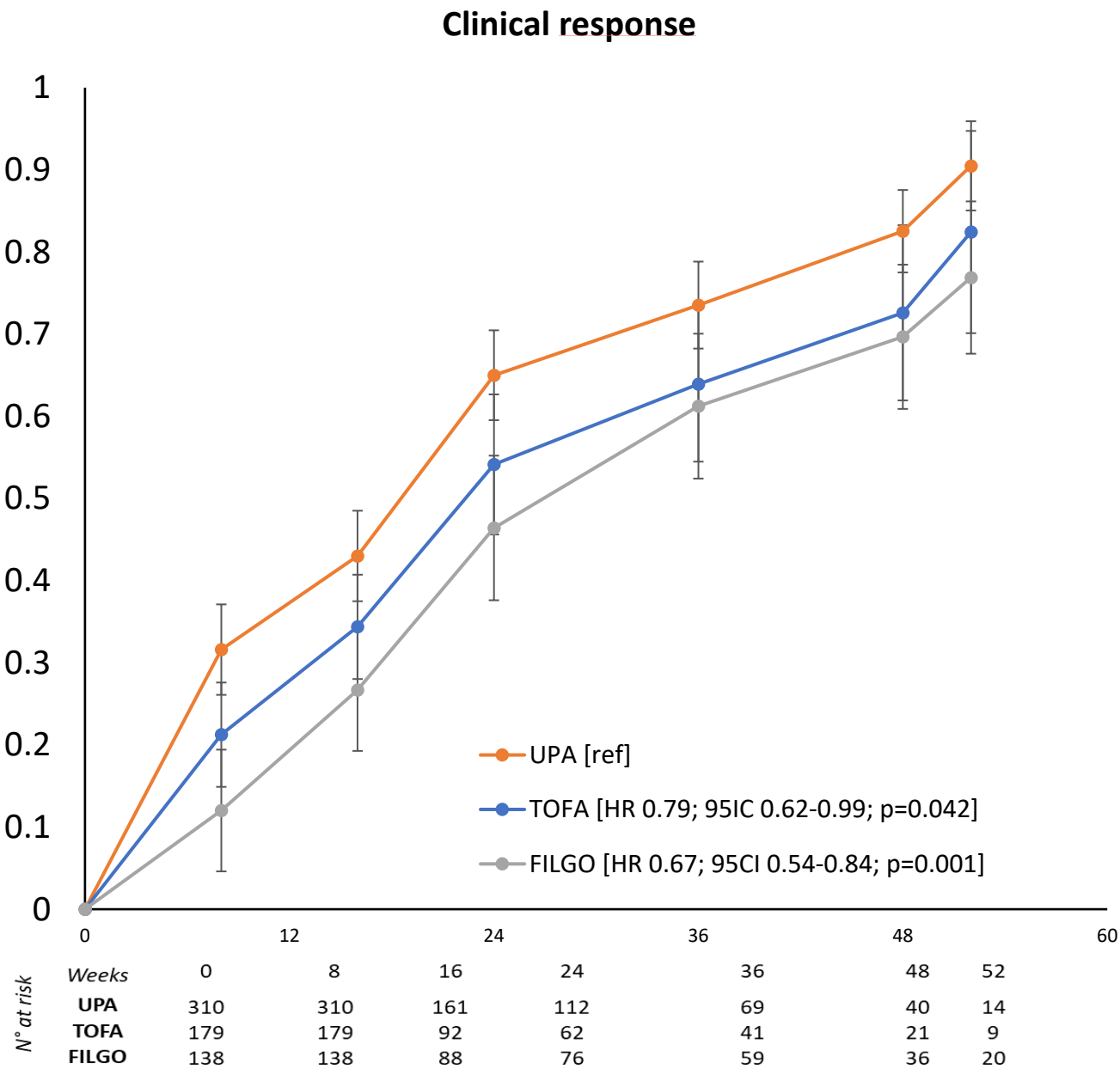
e-mail: alfredo.papa@unicatt.it

ORCID: <https://orcid.org/0000-0002-4186-7298>

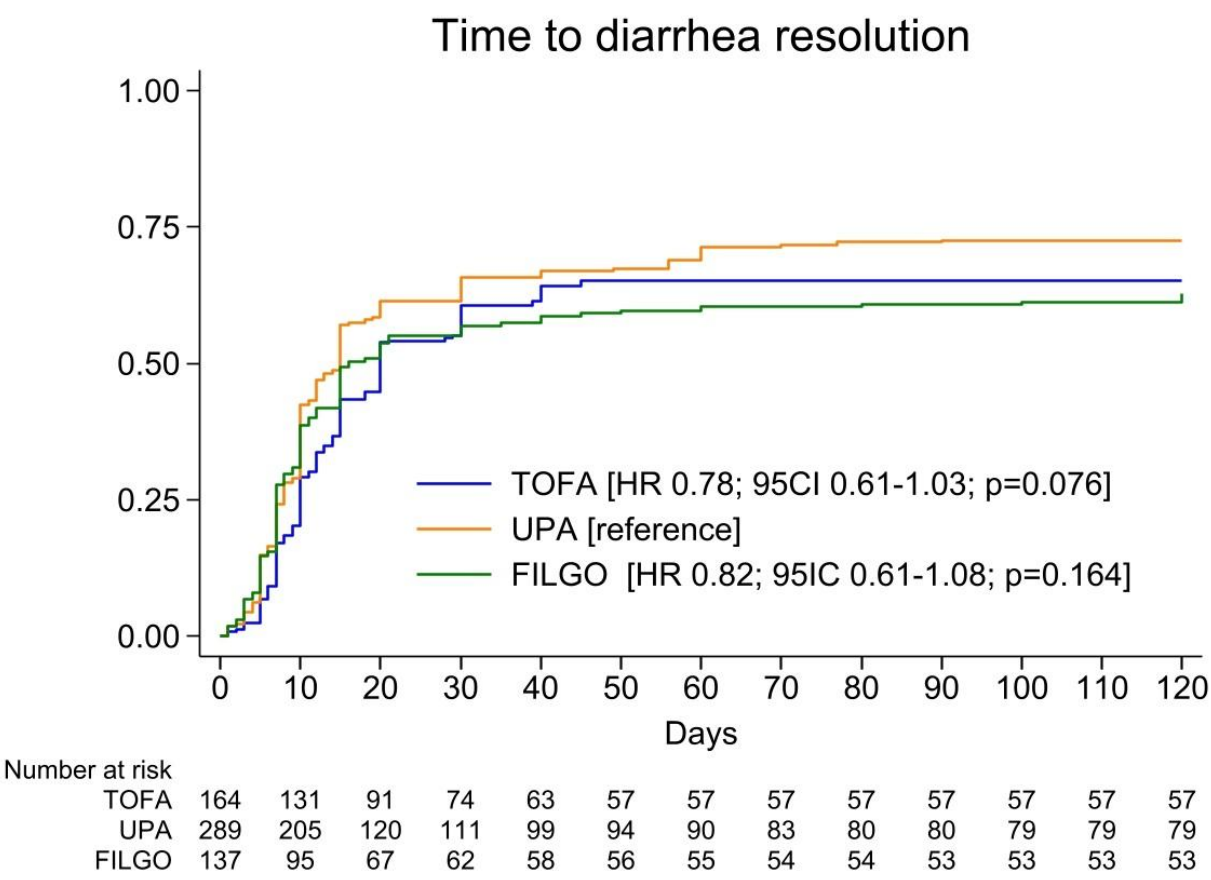
Supplementary Table 1.

Outcome	IPTW-Adjusted Remission Probabilities by Treatment Group and Timepoint		
	TOFA (n=179)	UPA (n=310)	FILGO (n=138)
Clinical Remission			
Week 8	37/179; 20.8 (15.4–27.6)	91/310; 29.3 (25.1–34.1)	23/138; 16.9 (12.6–22.5)
Week 16	40/135; 29.4 (23.2–36.6)	78/203; 38.3 (33.8–43.1)	31/111; 27.7 (22.4–34)
Week 24	46/117; 39.1 (32.5–46.5)	77/170; 45.1 (40.5–49.8)	27/93; 29.1 (23.7–35.4)
Week 36	43/96; 44.6 (37.9–51.9)	74/145; 51.3 (46.8–55.9)	29/91; 31.9 (26.3–38.3)
Week 48	40/84; 47.7 (40.9–54.8)	65/122; 53 (48.4–57.5)	28/86; 32.4 (26.8–38.8)
Week 52	39/78; 49.6 (42.7–56.5)	61/116; 53 (48.4–57.5)	28/85; 33.4 (27.7–39.7)
Steroid-Free Remission			
Week 8	31/179; 17.3 (12.9–22.9)	86/310; 27.7 (24.1–31.6)	22/138; 15.6 (11.9–20.3)
Week 16	28/134; 20.8 (16.1–26.6)	68/185; 36.7 (33–40.6)	23/107; 21.7 (17.4–26.7)
Week 24	38/125; 30.2 (24.9–36.2)	61/144; 42.5 (38.8–46.2)	24/95; 25.5 (21–30.6)
Week 36	38/101; 37.2 (31.6–43)	55/118; 46.4 (42.8–49.9)	25/87; 28.9 (24.2–34.1)
Week 48	34/83; 40.6 (35.1–46.3)	49/100; 49.5 (46–52.9)	24/80; 30.1 (25.3–35.2)
Week 52	31/74; 42.1 (36.6–47.7)	43/86; 50.4 (46.9–53.7)	24/78; 31.2 (26.4–36.4)
Biochemical Remission			
Week 8	30/179; 16.8 (12.5–22.4)	74/310; 23.8 (20.3–27.6)	19/138; 13.7 (10.2–18.2)
Week 16	32/135; 23.8 (18.8–29.7)	63/203; 31 (27.4–34.9)	25/111; 22.5 (18.1–27.5)
Week 24	37/117; 31.7 (26.3–37.7)	62/170; 36.5 (32.8–40.4)	22/93; 23.6 (19.2–28.7)
Week 36	35/96; 36.2 (30.7–42)	60/145; 41.6 (37.9–45.3)	24/91; 25.9 (21.3–31)
Week 48	32/84; 38.6 (33.1–44.4)	52/122; 42.9 (39.2–46.6)	23/86; 26.3 (21.7–31.4)
Week 52	31/78; 40.1 (34.6–45.8)	50/116; 42.9 (39.2–46.6)	23/85; 27 (22.4–32.2)

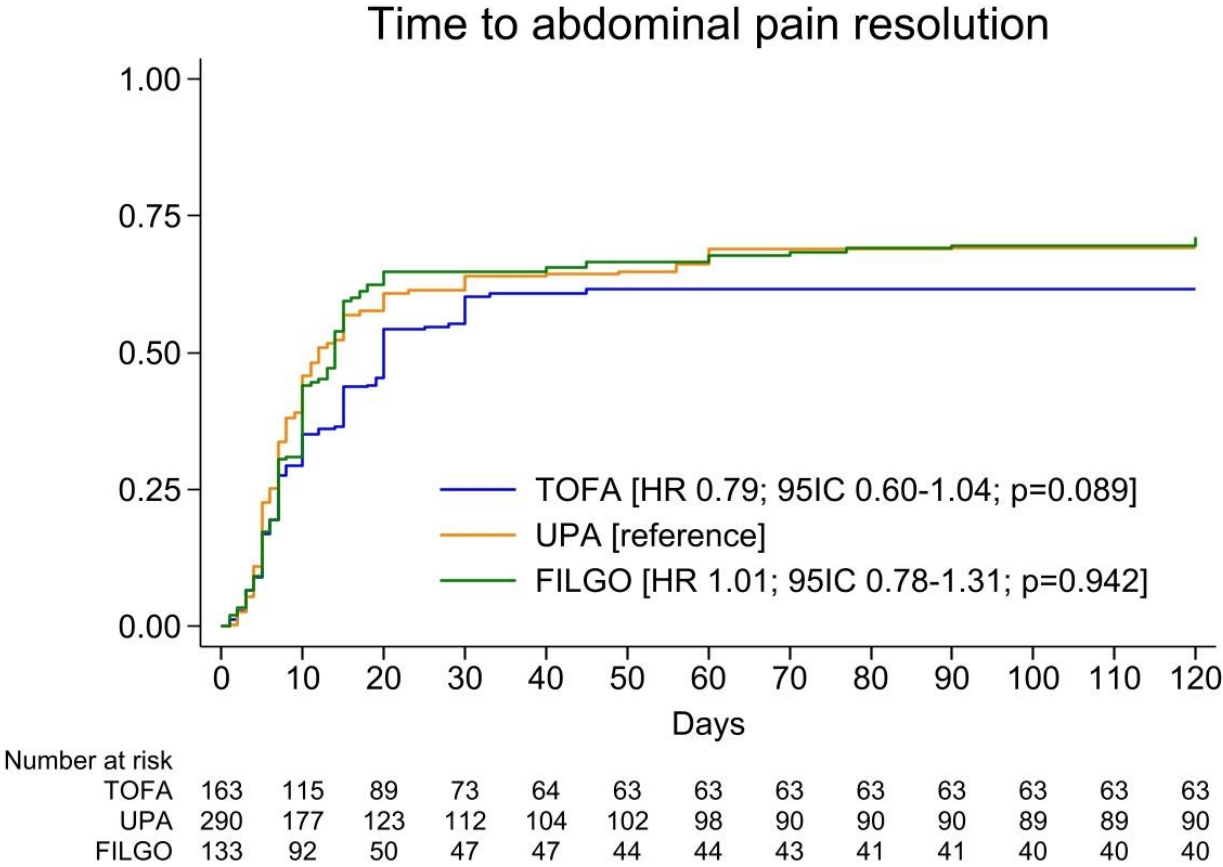
Supplementary Figure S1



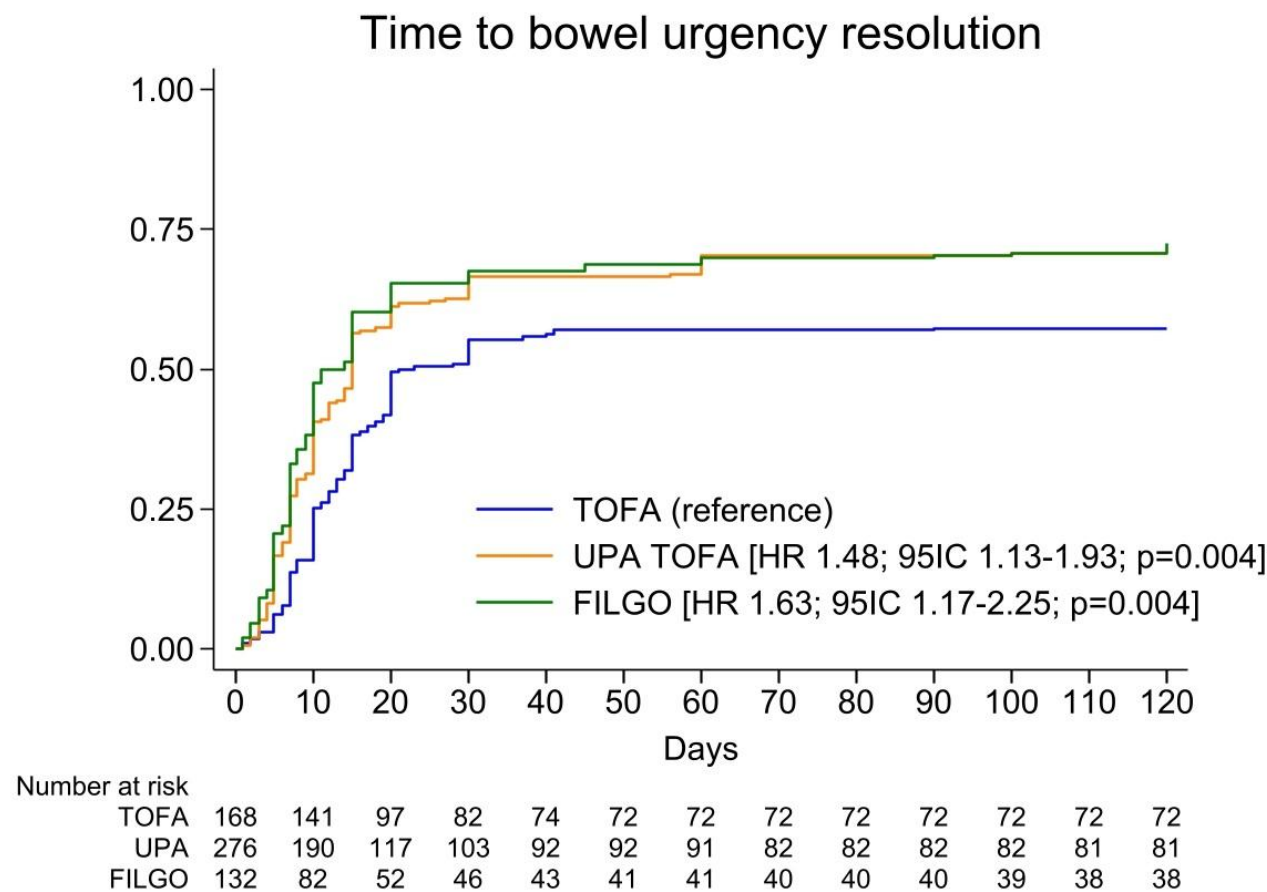
Supplementary Figure S2



Supplementary Figure S3



Supplementary Figure S4



Supplementary Figure S5

