

## The pediatric endoscopy practice in Italy: A nationwide survey on behalf of the Italian society of pediatric gastroenterology, hepatology and nutrition (SIGENP)



\*Corresponding author at: Department of Maternal and Child Health, Pediatric Gastroenterology and Liver Unit, Sapienza University of Rome, Viale Regina Elena 324, 00161 Roma, Italy.

Dear Editor,

Despite digestive endoscopy is a fundamental tool for pediatric gastroenterologists, an official and standardized program does not exist in Europe.

Here, we report the results of a nationwide electronic survey realized on behalf of the Italian Society of Pediatric Gastroenterology, Hepatology and Nutrition (SIGENP).

This study analyzed for the first time the pediatric endoscopy practice in Italy. Global data about the centers performing endoscopy in children have never been reported in our country. However, the number of participants (44 sites), the high response rate, the geographical distribution (16/20 regions) and the overall number of procedures examined suggest that the present data collection might be a reliable picture of the pediatric endoscopy in Italy.

This survey showed that endoscopy in children is still performed by an adult endoscopist in more than one third (35,6%) of centers (Fig. 1). This result suggests how far is the Italian practice from the latest European guidelines, that recommend performing endoscopy in a friendly setting and with a dedicated team and instruments [1]. On the other hand, endoscopies were always indicated (100% of cases) by pediatric gastroenterologists or pediatric surgeons, and in 88,8% of centers the referral pediatrician attended the procedure in the endoscopy room [2]. Indeed, adult gastroenterologists could be unprepared to identify pediatric diseases, or to approach children in an appropriate way [5]. For this reason, endoscopy in children should be performed by pediatric gastroenterologists or pediatric surgeons as much as possible. In centers in which there is not a dedicated pediatric unit, adult endoscopists can perform endoscopies as long as they are supported by a close interaction with the referral pediatrician [6].

This survey also points out the large variability between centers in term of number of procedures performed per year. In fact, the

median number was 200 but ranged from 4 to 2000 (Fig. 2). Analyzing data in details, 10 units carried out more than 500 endoscopies per year, 13 centers between 200 and 499 and 22 less than 200. The smaller centers usually do not perform lower GI endoscopy or therapeutic procedures. It is interesting to note, that in the majority (13/22) of these sites with less than 200 procedures/year, pediatric endoscopy was performed by adult endoscopists. This data confirms that the cooperation between adult GIs and pediatricians is critically needed in smaller pediatric centers with a lower procedure volume. In the next future, the development of regional referral pediatric units might centralize operators and endoscopy rooms in dedicated pediatric settings.

To date, a specific training in pediatric endoscopy is appropriately defined only in US and UK [3,4]. Consequently, different skills and operator experience have generated a great inconstancy of training paths in our country [3]. Some operators have been trained in adult units, while others only in pediatric ones with lesser availability of procedures and consequently a longer learning curve.

The survey revealed also a huge difference in terms of the operator availability per center (range from 1 to 10). Intriguingly, there was no correlation between the number of procedures and the number of endoscopists. One of the larger centers, with about 900 endoscopies per year, has just one operator, whereas units with less than 200 endoscopies have from 5 to 7 operators (often adult endoscopists). The number of procedures per year does not correlate even with the size of pediatric unit, neither the availability of emergency service, nor the number of instruments. This data reveals the absence of specific support by Institutions in providing dedicated resources to pediatric endoscopy over the country.

The availability of emergency services also confirms the absence of national plans in this filed. An emergency endoscopy service (24/24 h) was available only in 33 (73,3%) centers.

Concerning sedation techniques, the survey has demonstrated that there is a proper approach. Indeed, sedation for pediatric endoscopy is currently available in all centers, and this result is perfectly in line with the available evidence [1]. An adequate safety level is provided by the choice of moderate-to-deep sedation, which is preferred (71,1%) for diagnostic endoscopies, whereas, deep sedation or general anesthesia is usually considered during therapeutic procedures. Of note, the majority of sedations are performed by anesthesiologists (4/5 of cases), with only 1/5 of the cases in which sedations were delivered by the same operator doing the

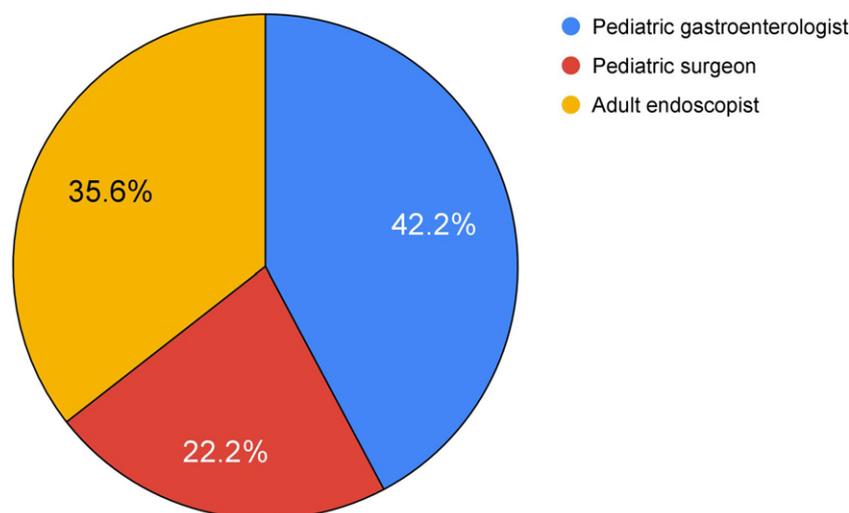


Fig. 1. Percentage of different operators performing endoscopy in children in Italy.

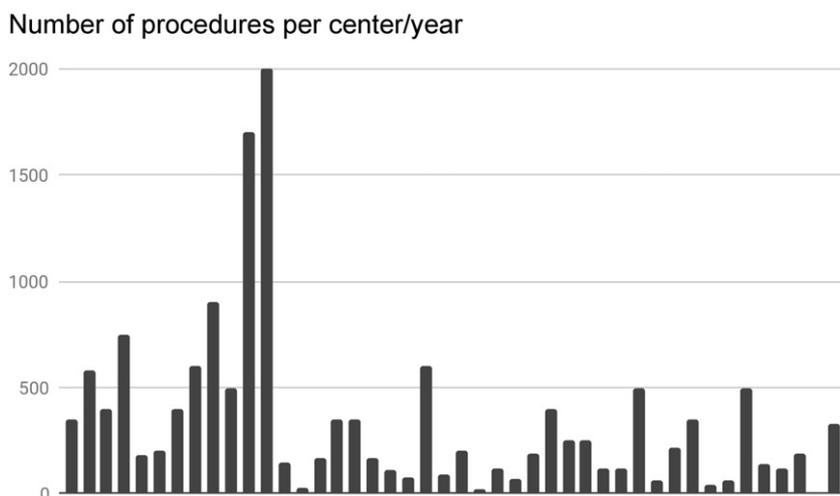


Fig. 2. Reported number of endoscopies per center/year.

endoscopy. It is true that the presence of the anesthesiologists guarantees safer procedures, but on the other hand, the availability of them is one of the limiting factors in the number of procedures performed by the centers. For this reason, some operators perform sedation and endoscopy at the same time. Indeed, with an adequate training and setting, this seems to be possible and safe.

The main indication (73,3%) for upper GI endoscopy was celiac disease (CD). This data is pretty surprising, considering the recent ESPGHAN guidelines which have introduced the diagnosis of CD without biopsies [7]. However, endoscopy is still necessary in many cases, and probably the high level of awareness as well as the long history of CD in Italy, contributed to maintain this condition as the most common to perform an upper GI procedure.

The main indication for lower GI endoscopy was suspected IBD (58%), followed by bloody stools (35,5%), abdominal pain (4,4%) and finally diarrhea (2,2%). This result confirms the increased IBD incidence in children as well as a proper adherence to the latest guidelines by the Italian pediatricians.

Excitingly, small bowel endoscopy is available in almost two third of centers. Capsule endoscopy was the most common tool, but only 10 units could also perform device assisted enteroscopy. This confirms the importance of a small bowel evaluation to diagnose IBD and investigate obscure gastrointestinal bleeding in childhood [8,9]. Capsule endoscopy is probably much more common due to the lack of invasiveness and ionizing radiations which make this tool child-friendly.

Finally, in the last questions of the questionnaire, participants highlighted which resources would be useful to implement their practice. Remarkably, more than one third would obtain a dedicated pediatric endoscopic room. Indeed, dedicated pediatric rooms are one of the main factors determining quality of procedures [3]. Increasing the number of pediatric endoscopists and instruments was also considered important, underlying the paucity of support by Institution in this particular field.

Although, to our knowledge, the present study represents the most extensive pediatric endoscopy data collection carried out in Italy we have to acknowledge some limitations. First, despite the questionnaire was created ad hoc by experts, it was semiquantitative: on one hand this contributed to fill in data anonymously, quickly and easily, not requiring any clinical charts review; on the other hand, the collected data lacked in precision and may have increased the risk of biases. Indeed, a web-based question-

naire does not guarantee the reliability of the results. Second, we invited participants throughout the communication channels provided by SIGENP (i.e. website, mailing lists, national meetings etc.) and we cannot be sure that all the units performing endoscopy in children are actually surveyed. But again, this is the first experience in this particular field, and we hope to improve our data in the next future even by spreading these results among the Italian pediatricians. Third, we did not evaluate the clinical outcomes and pediatric endoscopy impact on patients' clinical history, focusing only on procedural and technical issues, therefore this was not in the aims of the study. Considering all these methodological limitations, the collected data has to be mostly considered an estimation, rather than a precise measure.

As resulted from this survey, we can conclude that our national pediatric society (SIGENP) should take the responsibility to uniform the pediatric endoscopy practice by different steps: (1) developing national consensus guidelines, (2) creating dedicated pediatric training programs for both pediatricians and adult gastroenterologists, (3) expressing demands of adequate support (i.e. instruments, operators, etc.) to the referral Institutions. Furthermore, as a result of this activity, an accreditation program based ON minimal standard quality indicators should be implemented and sustained. Similar data from other states within Europe and even worldwide could be useful to evaluate pediatric endoscopy and stimulate the development of protocols to harmonize clinical practice.

#### Conflicts of interest

None declared.

#### Funding

Each author certifies that he or she has or may receive payments or benefits from a commercial entity related to this work.

#### References

- [1] Thomson M, Tringali A, Dumonceau JM, Tavares M, Tabbers MM, Furlano R, et al. Pediatric gastrointestinal endoscopy: European society for paediatric gastroenterology hepatology and nutrition (ESPGHAN) and European society of gastrointestinal endoscopy (ESGE) guidelines. *J Pediatr Gastroenterol Nutr* 2017;64:133–53.
- [2] Belsha D, Bremner R, Thomson M. Indications for gastrointestinal endoscopy in childhood. *Arch Dis Child* 2016;101:1153–60.

- [3] Kramer RE, Walsh CM, Lerner DG, Fishman DS. Quality improvement in pediatric endoscopy: a clinical report from the NASPGHAN endoscopy committee. *J Pediatr Gastroenterol Nutr* 2017;65:125–31.
- [4] D'Antiga L, Nicastrò E, Papadopoulou A, Mearin ML, Tzivinikos C, Vandenplas Y. European society for pediatric gastroenterology, hepatology, and nutrition syllabus for subspecialty training: moving towards a European standard. *J Pediatr Gastroenterol Nutr* 2014;59:417–22.
- [5] ASGE Standards of Practice Committee, Lightdale JR, Acosta R, Shergill AK, et al. Modifications in endoscopic practice for pediatric patients. *Gastrointest Endosc* 2014;79:699–710.
- [6] Hayat J, Sirohi R, Gorard D. Paediatric endoscopy performed by adult-service gastroenterologist. *Eur J Gastroenterol Hepatol* 2008;20:648–52.
- [7] Husby S, Koletzko S, Korponay-Szabó IR, Mearin ML, Phillips A, Shamir R. European society for pediatric gastroenterology, hepatology, and nutrition guidelines for the diagnosis of coeliac disease. *J Pediatr Gastroenterol Nutr* 2012;54:136–60.
- [8] Oliva S, Thomson M, de Ridder L, Martín-de-Carpi J, Van Biervliet S, Braeuger C. Endoscopy in pediatric inflammatory bowel disease: a position paper on behalf of the Porto IBD Group of the Espghan. *J Pediatr Gastroenterol Nutr* 2018;67:414–30.
- [9] Oliva S, Pennazio M, Cohen SA, Aloï M, Barabino A, Hassan C. Capsule endoscopy followed by single balloon enteroscopy in children with obscure gastrointestinal bleeding: a combined approach. *Dig Liver Dis* 2015;47:125–30.

Marco Deganello Saccomani<sup>a</sup>

<sup>a</sup> Department of Pediatrics, Women's and Children's University Hospital of Verona, Italy

Lorenzo Norsa<sup>b</sup>

<sup>b</sup> Pediatric Hepatology, Gastroenterology and Transplantation Unit, Hospital Papa Giovanni XXIII, Bergamo, Italy

Salvatore Oliva<sup>c,\*</sup>

<sup>c</sup> Department of Maternal and Child Health, Pediatric Gastroenterology and Liver Unit, Sapienza University of Rome, Italy

the SIGENP Endoscopy Working Group, Gian Luigi de'Angelis<sup>d</sup>, Salvatore Accomando<sup>e</sup>, Patrizia Alvisi<sup>f</sup>, Valerio Balassone<sup>g</sup>, Matteo Bramuzzo<sup>h</sup>, Angelo Campanozzi<sup>i</sup>, Francesca Cavataio<sup>j</sup>, Chiara Centenari<sup>k</sup>, Andrea Chiaro<sup>l</sup>, Fabio Cisarò<sup>m</sup>, Michele Citrano<sup>n</sup>, orenzo Costa<sup>o</sup>, Rita Cozzali<sup>p</sup>, Grazia D'Adamo<sup>q</sup>, Mario D'Altilia<sup>r</sup>, Teresa Di Chio<sup>s</sup>, Giovanni Di Nardo<sup>t</sup>, Natale Dodaro<sup>u</sup>, Diego Falchetti<sup>v</sup>, Annalisa Famiani<sup>w</sup>, orella Fanti<sup>x</sup>, Enrico Felici<sup>y</sup>, Ruggiero Francavilla<sup>z</sup>, Paolo Gandullia<sup>A</sup>, Simona Gatti<sup>B</sup>, Antonino Granata<sup>C</sup>, Maria Teresa Illiceto<sup>D</sup>, Marta Maino<sup>E</sup>, Cristina Malaventura<sup>F</sup>, Cecilia Mantegazza<sup>G</sup>, Stefano Martelossi<sup>H</sup>, Erasmo Miele<sup>I</sup>, Alice Monzani<sup>J</sup>, Alessandro Muscas<sup>K</sup>, Emanuele Nicastrò<sup>d</sup>, Paolo Orizio<sup>L</sup>, Caterina Pacenza<sup>M</sup>, Monica Paci<sup>N</sup>, Barbara Parma<sup>O</sup>, Alessandro Raffaele<sup>P</sup>, Alberto Ravelli<sup>Q</sup>, Claudio Romano<sup>R</sup>, Caterina Strisciuglio<sup>S</sup>

<sup>d</sup> Gastroenterology and Endoscopic Unit, Pediatric Section, University of Parma, Italy

<sup>e</sup> Department of Pediatrics, University of Palermo, Italy

<sup>f</sup> Pediatric Gastroenterology Unit, Maggiore Hospital, Bologna, Italy

<sup>g</sup> Digestive Endoscopy and Surgery Unit, Bambino Gesù Children's Hospital, Rome, Italy

<sup>h</sup> Gastroenterology, Digestive Endoscopy and Nutrition Unit, Institute of Child and Maternal Health - IRCCS "Burlo Garofolo", Trieste, Italy

<sup>i</sup> Department of Pediatrics, University of Foggia, Italy

<sup>j</sup> Pediatric Gastroenterology Unit, Hospital "G. Di Cristina" ARNAS Civico, Palermo, Italy

<sup>k</sup> Pediatric Gastroenterology Unit, Hospital "Versilia", Lido di Camaiore, Italy

<sup>l</sup> Department of Pediatrics, Hospital Maggiore, Crema, Italy

<sup>m</sup> Pediatric Gastroenterology Unit, Pediatric Hospital "Regina Margherita", Torino, Italy

<sup>n</sup> Department of Pediatrics, "Ospedali Riuniti Villa Santa Sofia-Cervello", Palermo, Italy

<sup>o</sup> Department of Pediatric Surgery, "San Bortolo" Hospital, Vicenza, Italy

<sup>p</sup> Pediatric Unit, Department of Surgical and Biological Sciences, University of Perugia, Italy

<sup>q</sup> Department of Pediatrics, AOU Ruggi-Cava de'Tirreni, Salerno, Italy

<sup>r</sup> Department of Pediatrics, "Casa sollievo della sofferenza", San Giovanni Rotondo, Foggia, Italy

<sup>s</sup> Department of Clinical and Experimental Medicine, University of Pisa, Italy

<sup>t</sup> Pediatric Gastroenterology Unit, Santobono-Pausilipon Children's Hospital, Naples, Italy

<sup>u</sup> Department of Pediatrics, Hospital of Cosenza, Italy

<sup>v</sup> Department of Pediatric Surgery, Hospital "Niguarda", Milan, Italy

<sup>w</sup> Department of Pediatrics, Hospital "Santo Stefano", Prato, Italy

<sup>x</sup> Gastroenterology and Gastrointestinal Endoscopy Division, San Raffaele Scientific Institute, Milan, Italy

<sup>y</sup> Department of Pediatrics, Children Hospital "C. Arrigo", Alessandria, Italy

<sup>z</sup> Pediatric Gastroenterology and Hepatology Unit, University of Bari, Italy

<sup>A</sup> Pediatric Gastroenterology and Endoscopy, Gaslini Institute for Child Health, Genoa, Italy

<sup>B</sup> Department of Pediatrics, Polytechnic University of Marche, Salesi Children's Hospital, Ancona, Italy

<sup>C</sup> Endoscopy Service, Department of Diagnostic and Therapeutic Services, IRCCS-ISMETT, Palermo, Italy

<sup>D</sup> Pediatric Gastroenterology and Digestive Endoscopic Unit, Department of Pediatrics, Santo Spirito Hospital of Pescara, Italy

<sup>E</sup> Endoscopic Unit, ASST Hospital "San Gerardo", Monza, Italy

<sup>F</sup> Section of Pediatrics, Department of Medical Sciences, University of Ferrara, Italy

<sup>G</sup> Pediatric Unit, "Buzzi" Hospital of Milan, Italy

<sup>H</sup> Department of Pediatrics, Hospital "Ca' Foncello", Treviso, Italy

<sup>I</sup> Department of Translational Medical Science, Section of Pediatrics, University of Naples "Federico II", Naples, Italy

<sup>J</sup> Division of Pediatrics, Department of Health Sciences, University of Piemonte Orientale, Novara, Italy

<sup>K</sup> Department of Pediatrics, Hospital "Brotzu", Cagliari, Italy

<sup>L</sup> Department of Pediatric Surgery, "Spedali Civili" Children's Hospital, Brescia, Italy

<sup>M</sup> Department of Pediatrics, Hospital "S. Giovanni di Dio", Crotone, Italy

<sup>N</sup> Gastroenterology and Nutrition Unit, Meyer Children's Hospital, Florence, Italy

<sup>O</sup> Department of Pediatrics, Hospital "Sant'Anna", Como, Italy

<sup>P</sup> Department of Pediatric Surgery, IRCCS Hospital "San Matteo", Pavia, Italy

<sup>Q</sup> Gastroenterology and GI Endoscopy Unit,  
Department of Pediatrics, “Spedali Civili” Children’s  
Hospital, Brescia, Italy

<sup>R</sup> Human Pathology and Pediatric Department,  
University of Messina, Italy

<sup>S</sup> Department of Women, Children and Surgery,  
University “Luigi Vanvitelli”, Naples, Italy

15 May 2019

<https://doi.org/10.1016/j.dld.2019.05.031>

### Thermal coagulation of mucosal defect margins using monopolar forceps reduces adenoma recurrence after colonic endoscopic mucosal resection



Dear Editor,

We read with great interest a recent article by Kandel et al. about thermal ablation of mucosal defect margins after endoscopic mucosal resection (EMR) and the associated reduction of the risk of adenoma recurrence [1].

As ESGE guidelines about EMR pointed out [2,3], previous studies in this field are very rare and predominantly retrospective, so the need for additional data about this topic is very strong.

We confirmed the efficacy of this technique also in our tertiary referral endoscopy center, using a variant technique.

From January 2016 to December 2018, 40 consecutive patients (22 females, 18 males; mean age 70,2 years) with single lateral-spreading tumors (LSL) (36 LST granular-type – mean dimension 3,98 cm-, 4 LST non-granular type – mean dimension 2,75 cm) in different colonic segments (10 patients at the ileo-cecal valve/caecum; 7 patients in the rectum; 5 patients at the left colon; 16 patients at the right colon) were treated using polypectomy snares (monofilament 15 mm–25 mm G-Flex or polyfilament snare, 27 mm–30 mm, Captivator Boston Scientific) and previous submucosal injection of physiological solution added with indigo carmine and epinephrine 1: 20,000.

Of 40 procedures, we performed 9 en-bloc resections and 31 piece-meal resection. We treated by thermal ablation (Hot Biopsy Radial Jaw™ 4 2.8 mm, Boston Scientific.) the margins around the site of the endoscopic resection in all the cases.

At histological examination, 33 tubulo-villous adenomas (20 with low grade dysplasia, 4 of which with concomitant serrated

component and 13 with high grade dysplasia, 4 of which with concomitant serrated component), 2 villous adenomas (both with high grade dysplasia, one of which with concomitant serrated component), 2 serrated adenomas (one of which with high grade dysplasia), 1 tubular adenoma and 2 in situ adenocarcinomas were reported.

1 patient (with LST non-granular type, 3,5 cm, villous adenoma with high-grade dysplasia) out of 40 (2,5%) had a local recurrence at 4 months and was re-treated endoscopically.

The mean follow-up was 12 months.

In conclusion, as in the reference study, the thermal ablation of the mucosal defect margins after EMR appears to be an effective and relatively safe option to reduce the risk of local recurrence.

#### Conflict of interest

None declared.

#### References

- [1] Kandel P, Werlang ME, Ahn IR, Woodward TA, Raimondo M, Bouras EP, et al. Prophylactic snare tip Soft coagulation and its impact on adenoma recurrence after colonic endoscopic mucosal resection. *Dig Dis Sci* 2019;(May).
- [2] Klein A, Tate DJ, Jayasekaran V, et al. Thermal ablation of mucosal defect margins reduces adenoma recurrence after colonic endoscopic mucosal resection. *Gastroenterology* 2019;156(3):604–13.e3.
- [3] Ferlitsch M, Moss A, Hassan C, et al. Colorectal polypectomy and endoscopic mucosal resection (EMR): European Society of Gastrointestinal Endoscopy (ESGE) Clinical Guidelines. *Endoscopy* 2017;49.

Francesco Pugliese\*

Angelo Italia

Lorenzo Dioscoridi

Aurora Giannetti

Giulia Bonato

Massimiliano Mutignani

*Digestive and Interventional Endoscopy, ASST*

*Grande Ospedale Metropolitano Niguarda, Milan Italy*

\* Corresponding author at: Digestive and Interventional Endoscopy Unit, ASST Grande Ospedale Metropolitano Niguarda, Piazza dell’Ospedale Maggiore 3, 20162, Milan, Italy.  
E-mail address: [fpugliese@ospedaleniguarda.it](mailto:fpugliese@ospedaleniguarda.it)  
(F. Pugliese)

20 May 2019

<https://doi.org/10.1016/j.dld.2019.05.032>