European Review for Medical and Pharmacological Sciences 2017; 21: 899-902

Editorial

Present and future of emergency surgery as independent specialty in Italy: is the rescue surgery turning the underdog into a hero?

D. GUI, V. COZZA, G. PEPE, M. DI GREZIA, A. LA GRECA, S. MAGALINI

Department of Emergency Surgery, Catholic University of the Sacred Heart, School of Medicine, Rome, Italy

The emergency surgeon in Italy has been traditionally considered as "a general surgeon somehow dealing with emergency" and therefore treating on a part-time basis, and without specific training, the patients admitted to the Emergency Department for acute surgical illness or trauma. Consequently, she/he utilizes procedures no different or no more specific from those used in elective surgery. The proximity to the general surgery has been traditionally considered the rationale for not fully recognizing emergency surgery as an independent specialty[1]. On the other hand, the general surgeon occasionally charged with the duty of emergency cases – i.e. the one on call – doesn't show, in general, a sincere commitment to deal with all the problems of these distinctive patients, the strictly operative ones being only he wants to address during his shift. She/he, for instance, refuses to be involved in the intensive surgical care, leaving the intensive therapy physician or anesthesiologist the entire work and assuming the role of a consultant[2]. Provided the physiopathology is extraordinarily relevant in the emergency setting[3,4], this fragmentation of roles negatively impacts on the continuity of care and the correct therapeutic choices[5].

This is somehow different from what happens in other Countries, and especially in the United States where surgical intensive care is an established part of the Emergency and Trauma Surgery specialty[6]. Consequently, the profile of the specialty is more consistent and unique, the duties spanning from the control of bleeding in the emergency setting to the intensive therapy of shock and sepsis, ventilation, physiopathologic assessment as a part of operative decision, attention to timing and step by step surgical approach, competence in life saving procedures not necessarily operative (like angioembolization, Resuscitative Endovascular Balloon Occlusion of the Aorta, REBOA[7]). In this integrated vision of the emergency patient care, new strategies have been experimented that are now generally accepted, as the damage control surgery, the non-operative management of solid organ trauma or pelvis fractures, the open abdomen and the negative pressure wound therapy of catastrophic peritoneal sepsis[8]. A forest of procedures and protocols has been developed in the last years, adding more and more personality and peculiarity to the specialty of Emergency and Trauma Surgery which allegedly was said to stand on three "pillars": general surgery emergency cases (peritonitis, obstructions, sepsis, etc.), trauma and intensive care[9].

Recently, specific attention has been given to an increasing peculiar workload for the emergency surgeon previously not considered or unrecognized as such, which is dealing with difficult complications due to unsuccessful first operations carried out in-house or more frequently in other hospitals or by other surgeons. So prevalent has this workload become, that the new concept of emergency surgery has added the fourth pillar: emergency surgery, trauma, critical care and "rescue surgery"[9] (Peitzman and Britt, at the American Association for the Surgery of Trauma in Las Vegas, Nevada in 2015[10,11]).

The word "rescue" reflects very well the meaning of this type of surgery, which wants to treat and save a patient in desperate conditions after a previous complicated operation(s). Rescue surgery requires

Corresponding Author: Valerio Cozza, MD; e-mail: valerio.cozza@gmail.com

a full engagement of the whole emergency surgical team and often, in an ironic but appropriate word, transforms the surgeon in a hero, or at least makes her/him feel as such. The term "rescue surgery" was recently born in the United States and reflects the proud American view of an emergency surgeon, so "special" and powerful to deal with difficult cases with poor outcomes. The Italian perspective often sees the same situation with an opposite feeling: the rescuer is an "underdog", taking over the cases that no one wants and where she/he is expected to fail.

The past decades have seen some shy redefinition and improvement of the role of the Emergency Surgery in Italy, imitative of the American way of dealing with emergency cases. In many larger Hospitals the Emergency Surgery as an autonomous ward has been implemented, usually with a reduced number of medical personnel. As an Emergency Surgery unit working in one of the major Italian hospitals we see Rescue Surgery cases on a daily basis and the number of "opinions" or "request to take over the care" of complicated cases has increased every year since the start of activity in 2009. We focus on the pillar of Rescue Surgery in this article because it represents a highly qualified surgical activity that will probably contribute, in our opinion, to the rising reputation of the Emergency Surgery in our Country as an independent specialty.

Rescue Surgery is a "misunderstood" and underestimated entity which needs specific attention for the impact it has on patient's life but also on surgeon's work, physical and psychological commitment, costs and the hospital's general activity. "Elective" surgeons don't deal confidently with it, and resident's perception of the emergency and trauma surgery is unappealing[12]. The usual characteristics of such a case are: long hospitalization, multiple surgeries, malnutrition, poor mobility, multidrug resistant bacteria colonization or infection, depression, lack of patient motivation, fatigue, and a distressed family environment. The abdomen is the most common site of problems: it is usually hostile, and even in the best scenarios the infected/dehiscent wound is expected to heal slowly, requiring multiple dressing changes or surgical revisions, often under general anaesthesia and with devices such as the negative pressure wound managements. In other cases, a medical or conservative treatment can fail as well and result in operating in a more complicated field: e.g. necrotic-haemorrhagic and infected pancreatitis, failure of conservative treatment of cholecystitis, entero-atmospheric fistulae, soft tissue sepsis. Although benign conditions can have catastrophic complications, these patients frequently have an oncologic underlying disease in an advanced stage and a poor prognosis in the medium/long time. Patients often are referred to the emergency surgeon from the colleagues who performed the first operation. The cause can be that the first surgeon is a specialist (digestive surgeon, oncological gynecologist, urologist, endoscopist, etc.) who usually does not deal with complication of this entity, or that the initial relationship between surgeon and patient and family has been damaged by the complication, and the trust in this physician has expired. Sometimes the patient or his/her family decide to change hospital and usually go to a major medical Center, hoping for specialized experience and more resources.

In collaboration with the Italian Society of Emergency Surgery and Trauma (SICUT), we have submitted to all the Society members a survey questionnaire on Rescue Surgery in their activity. Our goal was to assess if the Emergency surgeons perceived the existence of what we herein denominate as Rescue Surgery and what importance they attributed to it. The survey was practically a scoping review to delineate the main characteristics of this pillar: define who is the surgeon dealing with difficult complications, what are the main issues, the most complicated cases and the principal strategies and tools to be used. The questionnaire, consisting of 12 items, was proposed online to 130 members of the Society for Emergency Surgery and Trauma (SICUT) in two successive rounds at one-month distance from one another. Thirty-one questionnaires were returned and analyzed, in line with the frequency of response of this kind of interview[12]. Table I resumes the results.

This simple survey confirms the rising importance of the Rescue Surgery in the Emergency Surgery settings. One-third of the interviewed population works in a specialized unit of Emergency Surgery. More than half the population works in a major hospital with a dedicated Trauma and Emergency Center. All the interviewed surgeons seemed to be well aware of the rescue surgery workload. One-third of the surgeons affirms that Rescue Surgery represents a significant percentage of their workload. These patients largely come from the surgeon's home hospital showing that rescue surgery is more often delegated to the emergency surgeon. The percentage (20%) of cases coming from outside is higher (50%) if we consider only answers of surgeons working in bigger hospitals. The initial surgical procedure more frequently leading to complications requiring rescue surgery is stated to be colonic surgery. One-third

Questionnaire

How many operations did you or your colleagues perform in the last 7 days on complications after surgery?	
Answer	Percentage of answer
<2	72%
2-5	28%
How many procedures (interventional radiology, endoscopy, other specialty operation such as tracheostomy) were performed in your Unit last week to treat surgical complications?	
Answer	Percentage of answer
<2	64%
2-5	16%
5-10	8%
What is the percentage of rescue surgery patients in your unit today?	
Answer	Percentage of answer
<5%	72%
5-15%	28%
Where do rescue patients usually come from in your experience?	
Answer	Percentage of answer
From other Hospitals	20% (answer usually given from surgeons working in bigger Hospitals)
From my own Unit	>50%
From Medical Wards and Rehabilitation Centers (answer usually given from surgeons working in smaller Hospitals)	20%
From the Surgical Unit in my Hospital	<10%
How often do you have to deal with complications from other surgeons of your own Hospital?	
Answer	Percentage of answer
Often	36%
Rarely	64% (but more often during nights and weekends 12%)
Which one is the main source of complications requiring Rescue Surgery in your opinion?	
Answer	Percentage of answer
Colon and appendix	54%
Abdominal wall	15%
Gallbladder, liver and biliary tract	12%
Other	12% (pancreas)
Stomach and small bowel	6%
What is the percentage of patients currently present in your Unit that required more than 1 rescue operation or procedure?	
Answer	Percentage of answer
<2	64%
2-5	28%
5-10	10%
Could you identify the principal tools or techniques that an emergency surgeon should master to treat rescue situations, and that will probably become an exclusive competence of emergency surgeons?	
Answer	Percentage of answer
Open abdomen	(10/25 answers)
Negative pressure wound therapy	(6/25)
Damage control	(6/25)
Others (interventional radiology, operative endoscopy, nutritional support, intraoperative blood salvage, biological meshes, multispecialist équipe) (3/25)	

Table I. Sample characteristics.

Type of Hospital		
Accident and emergency without all subspecialties: **32%**	Main trauma and emergency centre: **56%**	Minor accident and emergency only: **12%**
Number of Hospital beds (size of hospital)		
<500: **36%**	500-1000: **40%**	>1000: **24%**
Unit dealing with emergencies		
Emergency Surgery Unit: **32%**	General Surgery Unit(s): **68%**	
Number of surgical beds for emergency cases		
<10: **36%**	10-20: **56%**	>20: **8%**

of the surgeons affirms that repeated operations are necessary in 2-10% of cases. Not surprisingly, techniques in managing the open abdomen are the most utilized procedures. These are a kind of surgical assistance that require multiple operations, the use of defined protocols and procedures, the knowledge of technical solutions such as the devices for negative pressure therapy to be applied in the hostile and frail site of the abdominal cavity.

Rescue surgery will undoubtedly gain attention in the next future as a consequence of the sub-specialization in the elective surgery domain (many surgeons dedicate themselves only to one organ, or specialize in aggressive oncologic surgery, etc.)[13]. Rescue patients will increase in number and emergency surgeons will recognize the need for a specific training and experience in the matter that will constitute the fourth pillar of their activity. The Section of Surgery of the European Union of Medical Specialists has already considered Emergency Surgery as a proper division and training will be focused on rescue techniques as well[14].

Hopefully, Italian surgeons will culturally join this tendency and change the past concept of elective general surgeon occasionally facing emergency operations with unerring success. The rescue surgery workload, indications, and specific surgical techniques will eventually upgrade those surgeons devoted to emergency surgery to turn from "underdogs" to heroes in the common perception of the hospital, academic and public opinion and especially in their own self-esteem in the interest of such a difficult patient population.

Conflict of interest

The authors declare no conflicts of interest.

References

1) Leppäniemi A. Emergency surgery at crossroads: is it enough just to plug the hole? Scand J Surg 2007; 96: 182-183.
2) al-Ayoubi F, Eriksson H, Myrelid P, Wallon C, Andersson P. Distribution of emergency operations and trauma in a Swedish hospital: need for reorganisation of acute surgical care? Scand J Trauma Resusc Emerg Med 2012; 20: 66.
3) Leppäniemi A. Physiology and emergency surgery. Scand J Surg 2006; 95: 135.
4) Bucci S, de Belvis AG, Marventano S, De Leva AC, Tanzariello M, Specchia ML, Ricciardi W, Franceschi F. Emergency Department crowding and hospital bed shortage: is Lean a smart answer? A systematic review. Eur Rev Med Pharmacol Sci 2016; 2: 4209-4219.
5) Scarborough JE, Schumacher J, Pappas TN, McCoy CC, Englum BR, Agarwal SK Jr, Greenberg CC. Which complications matter most? Prioritizing quality improvement in emergency general surgery. J Am Coll Surg 2016; 222: 515-524.
6) Hoyt DB, Kim HD, Barrios C. Acute care surgery: a new training and practice model in the United States. World J Surg 2008; 32: 1630-1635.
7) Morrison JJ, Galgon RE, Jansen JO, Cannon JW, Rasmussen TE, Eliason JL. A systematic review of the use of resuscitative endovascular balloon occlusion of the aorta in the management of hemorrhagic shock. J Trauma Acute Care Surg 2016; 80: 324-334.
8) American College of Surgeons Committee on Trauma (2013). Advanced trauma life support program for doctors, 9th edn. American College of Surgeons, Chicago, 2013.
9) Kutcher ME, Sperry JL, Rosengart MR, Mohan D, Hoffman MK, Neal MD, Alarcon LH, Watson GA, Puyana JC, Bauzá GM, Schuchert VD, Fombona A, Zhou T, Zolin SJ, Becher RD, Billiar TR, Forsythe RM, Zuckerbraun BS, Peitzman AB. Surgical rescue: the next pillar of acute care surgery. J Trauma Acute Care Surg 2016; 82: 280-286.
10) Peitzman AB, Sperry JL, Kutcher ME, Zuckerbraun BS, Forsythe RM, Billiar TR, Alarcon L, Rosengart MR, Mohan D, Watson G, Puyana JC, Bauza G, Schuchert VD, Neal MD. Redefining acute care surgery–Surgical rescue. J Trauma Acute Care Surg 2015; 79: 327.
11) Britt LD. Acute care surgery: Is it time for a "victory lap"?. J Trauma Acute Care Surg 2016; 80: 8-15.
12) Hadzikadic L, Burke PA, Esposito TJ, Agarwal S. Surgical resident perceptions of trauma surgery as a specialty. Arch Surg 2010; 145: 445-450.
13) Leppäniemi A. Emergency medicine and emergency surgery — Where's the beef? Scand J Surg 2012; 101: 2-4.
14) Fingerhut A, Leppäniemi A, Coimbra R, Peitzman AB, Scalea TM, Voiglio EJ (Eds.). Emergency Surgery Course (ESC®) Manual - The Official ESTES/AAST Guide. Springer International Publishing, 2016.