



Surgical Procedures with Questionable Indications: An Update

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Abstract

This review summarizes available data on invasive procedures applied with questionable indications in Russia currently or in the recent past: mastectomy with the removal of muscles, gastrectomy for peptic ulcers, splenorenal anastomosis for diabetes mellitus, thoracic surgery for bronchial asthma and other pulmonary conditions, cauterization of cervical ectopy regardless of the presence of epithelial dysplasia. Considering the breast cancer incidence, millions of women underwent Halsted and lately of Patey mastectomy with removal of pectoral muscles without indications. The overuse of surgery in tuberculosis and alcoholism has been discussed elsewhere. It is known that invasive procedures can exert a placebo effect, which might have contributed to reported efficiency of some methods discussed here. However, by definition, placebo must be free of risks. Factors contributing to the persistence of suboptimal practices include a partial isolation from the international scientific community, shortages of medical education, unavailability of many internationally used handbooks. Admittedly, foreign literature is available on the Internet today, many guidelines being adjusted to international standards; but new problems related to conflicts of interest are coming instead. Considering shortcomings of medical practice, research and education, governmental directives and increase in funding are unlikely to be a solution. Measures for improvement of the healthcare in Russia must include participation of authorized foreign advisors.

Keywords: Breast cancer; Peptic ulcers; Gastrectomy; Diabetes; Portosystemic shunting; Asthma; Lung denervation; Medical ethics

Introduction

The main topic of this review is excessive use of invasive procedures in the Russian healthcare. Clinical recommendations are generally avoided here. This gave to the author a possibility to limit citation of international literature: the number of references supporting the narration is quite large already. It is known that invasive procedures can exert a placebo effect, which might have contributed to reported efficiency of some methods discussed here. However, by definition, placebo must be free of risks and adverse effects. Factors contributing to the persistence of suboptimal practices in Russia include a partial isolation from the international scientific community, shortages of medical education, unavailability of many internationally used handbooks [1,2]. Admittedly, foreign literature is available via the Internet today, many guidelines being adjusted to international standards. It is taken for granted and nobody gives thanks. We can hardly

imagine what immense work and immaculate integrity stands behind reliable medical research. On the contrary, some writers analyse complications of therapy in foreign countries without mentioning professional misconduct in Russia [3], details and references are in the book [4]. Certain published guidelines have remained without due commentaries, so that a comeback of outdated methods is not excluded. Suboptimal practices have been used as per instructions by healthcare authorities and leading experts' publications. The lacking professional autonomy has contributed to the persistence of outdated methods [5]. Some colleagues encountered impediments to their careers when they did not collaborate in dubious research and practice. Manipulation of statistics has been not unusual [4]. In conditions of paternalism, misinformation of patients, persuasion and compulsory treatments are deemed permissible [6]. Justifications of surgical hyper-radicalism could be heard in private conversations among medics, for example: "The hopelessly ill are

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dangerous” i.e. may commit reckless acts undesirable by the state. For example, glioblastoma patients have been routinely operated on, while it was believed by some staff that the treatment was generally useless, just forcing patients to spend the rest of their lives in bed [7]. One of the motives to overuse invasive procedures was personnel training, among others, with the aim of readiness for war. Some invasive methods with questionable indications were introduced or advocated by first generation military surgeons. In this connection, the limitations of medical education in the former Soviet Union (SU) should be mentioned. The Soviet period brought about an expansion of admission numbers to universities and medical educational institutions, sometimes with little regard for the quality of the academic preparation of students [2]. Of note, military and medical ethics are not the same. The comparatively short life expectancy in Russia is a strategic advantage as it necessitates less healthcare investments and pensions. Military functionaries and their relatives will become more dominant thanks to the Ukraine war. Those participating in it, factually or on paper, are obtaining the veteran status and hence privileges over fellow-citizens. Some of them will occupy leading positions at universities, scientific and healthcare institutions without adequate preparation and selection. War veterans enjoy advantages in the healthcare and everyday life; there are, however, misgivings that the status has been awarded gratuitously to some individuals from the privileged milieu. At the same time, some relatives of superior officers evaded military service under various pretexts [8]. In particular, many institutions of higher education grant exemption from the conscription. Being not accustomed to hard and meticulous work, some of the functionaries’ children have been involved in professional and other kind of misconduct [4,9]. As far as we know, the Soviet and present rulers, the party and military nomenklatura [10], did not allow the use of invasive procedures without indications on themselves and their relatives. Functionaries’ sons did not treat gonorrhoea by tamponade and bougienage of the urethra [11], alcoholics from their milieu have not been compulsorily treated by drip infusions being infected with viral hepatitis [12]. As for the medical personnel, it is unlikely that they cauterized cervical ectopies (discussed below) or performed Halstead mastectomy on their family members. Dentists would not apply dry cutting to discolored pits and fissures or demineralized enamel surfaces in their children [13]. This means that there has been deliberate infliction of bodily harm. Finally, the obstacles to the importation of drugs and medical equipment should be mentioned. Domestic products are promoted sometimes despite suboptimal quality and possible counterfeiting.

Methods

This is a narrative review based predominantly on Russian and partly on international literature. The search of literature was performed mainly on the PubMed and Research Gate. Russian-language professional publications were searched on the Internet, in libraries and the electronic database eLibrary.ru. The data from the literature have been reviewed and synthesized on the basis of the author's observations since the 1970s. It should be mentioned in this connection that, unlike other countries, public libraries are rarely used in Russia and usually contain no professional medical literature. Medical libraries are hindered from using by the general public, including even retired doctors, by technical difficulties and some non-cooperative staff [14].

Breast cancer

According to the author’s estimates after a practice of pathology abroad (repeatedly during 1990-2013), an average size of malignant tumors in surgical specimens was larger in Moscow university clinics than in hospitals in Europe and Southern Africa, which reflects the timeliness of cancer diagnostics. Another difference: almost all mastectomy specimens abroad were without muscle. The worldwide tendency towards a more sparing breast cancer management was not followed in the former SU for decades. In the 1980s and decreasingly in the 1990s, the Halsted procedure with the removal of both Pectoralis muscles was a predominant method of breast cancer (BC) management [15-18], it was presented as the main treatment modality of BC in some textbooks and monographs published in the 21st century [19-21]. The principle of informed consent was often disregarded. Patients with early cancers underwent mastectomies with resection of pectoral muscles. A surgery could be extended to a radical (Halsted) procedure if an intraoperative frozen section found an early (2 cm) BC [22]. The latter operation is known to be associated with complications. Even more radical methods with removal of parasternal and other lymphatic collectors were recommended and applied [23]. Newly developed mastectomy modalities with the muscle resection have been patented [24,25]. Advanced age was not regarded as contraindication to a radical surgery [26]. In view of complications, some experts recommended the modified radical mastectomy of Patey with resection of only the smaller pectoral muscle for T1-2 laterally located BCs [27-29]. Other experts advocated the Halsted procedure [30].

The Patey operation is also associated with adverse effects; nonetheless, it has been broadly used in the Russia during last decades. At the time of the author’s practice (1995-1998) at the Ostroumov hospital in Moscow, incorporating the Center for Senology (named Mammology in Russia), almost all mastectomy specimens independently of tumor size included the smaller pectoral muscle; but the Halsted procedure was applied as well. The “gradual abandonment of the Halsted operation” was



discussed in 2007 [31]. The study of symptoms after mastectomy in 247 women included 121 (48%) patients who underwent the operation of Patey and 73 (29%) that of Halsted [32]. In papers dated 2015-2022, the Patey operation was still mentioned as a routine procedure [33-35], but the preservation of both pectoral muscles was finally becoming a standard. Today, the recommendations are adjusted to international patterns. However, another extreme is observed: mastectomy without removal of pectoral muscles is called mutilation allegedly causing severe moral injury, whereas “the reconstruction has become an integral part of the breast cancer management” [36]. Such statements are accompanied by images of patients after reconstructive surgery, where breasts look (almost) as if not operated on. Apparently, the motive is economic one as the costs of plastic surgery are borne by patients. Indications to different methods of breast cancer management are beyond the scope of this review. Obviously, esthetic demands can be met in many cases by external prostheses.

Diabetes mellitus

The surgical spleno-renal anastomosis with the shunting of pancreatic blood into the systemic circulation was introduced by Eduard Galperin [37-40] and applied for the treatment of insulin-dependent diabetes mellitus. At the same time, Galperin wrote: “Diabetic patients generally tolerate surgery very poorly” [40]. The method was applied in type 2 diabetes as well [41,42]. The supposed mechanism was “creating a more optimal interaction of subcutaneously injected insulin and glucagon produced in pancreas” [38]. Of note, in patients with liver cirrhosis the surgical portocaval shunting resulted in deterioration of glucose tolerance [43]. Diabetes mellitus was regarded as a contraindication for portocaval anastomosis [44]. In a series of 415 patients, early post-operative complications were observed in 28 patients including 2 cases of sepsis, 5 of pyelonephritis, 5 of pneumonia; 2 patients died in the first post-surgery week. Ketonuria was observed in 18 patients [45], in agreement with the known fact that surgical stress may trigger ketosis in diabetics. Comparable percentages of complications were quoted in another paper [38]. The patients were subdivided into groups with a strong, moderate and absent effect [39]. There was no group with worsening, so that the assessment was probably biased. According to another report, thrombosis of the shunt was found by angiography in 27% of the patients within eight months after the operation [46]. Severe acidosis was designated as a typical complication [46,47]. The anti-diabetic efficiency of the shunting was moderate both in humans and in experimental dogs, whereas a majority of the animals did not survive the diabetes induction by streptozotocin or pancreatic resection with a subsequent shunting surgery [37]. During one-year (1990) engagement in the United States, Galperin used his method on dogs and rats deploring that

there was no opportunity to apply it in humans [40]. By 2011, the surgical treatment of diabetes described above was still in use while a risk of shunt thrombosis was pointed out [47,48]. The same experts applied renoportal venous anastomosis for the treatment of chronic hepatitis and arterial hypertension [47,49]. In the course of the operations, wedge biopsies from the pancreas (~0.64 cm) and core biopsies from kidney were collected. Histological descriptions included glomerulitis with proliferation of mesangial cells, their relocation to the periphery of capillary loops, mesangial interposition and formation of double-contoured basement membranes. The authors postulated that mesangioproliferative glomerulonephritis is the initial stage of diabetic glomerulopathy [50,51]. In fact, mesangial interposition and double-contoured basement membranes are typical for membranoproliferative glomerulonephritis. This condition, if found in a diabetic patient, may be seen as a superimposed disease, potentially needing immunosuppressive therapy. Renal biopsy is generally indicated for diabetics only if a kidney condition other than diabetic nephropathy is suspected; more details and references are in the preceding paper [52]. The misrepresentation of histological criteria of glomerulonephritis as features of diabetic nephropathy may lead to inadequate therapy. Last but not least importantly, renal and pancreatic biopsies are associated with risks. Invasive procedures applied within the framework of the surgical treatment of diabetes included also renal and splenic venography and celiac arteriography [38,45].

Peptic ulcers

The surgical treatment of gastro-duodenal ulcers in the former SU has been different from the international practice. Gastrectomy became the predominant method of peptic ulcer management after the 24th All-Union Congress of Surgeons in 1938 [53,54]. According to the author’s observations, gastric resections were comparatively rarely performed abroad for peptic ulcers; their volume was more limited, often corresponding to antrectomy. For perforations, an ulcer excision was usually performed and an annular specimen was sent to the pathology department. Laparoscopic repair is used increasingly these days. In Russia, primary gastric resection (2/3-4/5 of the stomach), antrectomy with vagotomy, or a simple suture have been applied in ulcer perforations [55-60]. Relapses after gastric resections or suturing of perforated ulcers were treated by gastrectomy [61]. At the same time, adverse effects of resections were generally known by experts [53,62]. The limited availability of modern medical therapy was designated as a social indication for gastrectomy [57]. The hyper-radicalism in the gastric surgery originates from the well-known surgeon Sergei Yudin (lately also spelled Iudin), who was a “passionate supporter of gastric resections in ulcer perforations” [63]. During the Second World War, Yudin was one of the leading surgeons of the Red army. He was known for his



radical approach: wide resection rather than drainage of wounds [63]. His leitmotif was: “Unhesitatingly excise muscular tissue to access fractured bone” [64]. The former health minister B.V. Petrovsky wrote that Yudin’s hyper-radicalism, followed by colleagues, led to hemorrhages, extensive defects of bone and soft tissues [65,66]. According to Yudin’s teachings, the pylorus and lesser curvature must be removed at an ulcer surgery. His articles advocating gastrectomy for peptic ulcers were republished with favorable editorial commentaries [67]. References to Yudin’s publications continued until recently, quoting the fact that he performed gastrectomy in 75% of perforated ulcers [66]. Resection of the stomach in case of perforation has been advocated by many experts from the former SU [53,57,68-73]. The supposed advantage of this method was ascribed to the limited availability of modern drugs. In some articles recommending gastrectomy, it was claimed that medical therapy does not achieve a complete recovery, so that resection should be performed at an early date to prevent complications [69]. The definition “complete recovery” seems to be hardly applicable to the condition after gastrectomy. Anyway this strategy has been in disagreement with that applied in other countries [74]. Like in many topics discussed here, recommendations are currently adjusted to international patterns. Recent guidelines included laparoscopic treatments and ulcer excision along with the suturing and resection as treatment options for perforated ulcers. A drastic decrease in surgery rate among ulcer patients during last decades with almost complete disappearance of elective resections [75-77] confirms the fact of overtreatment in the recent past.

Bronchial asthma and respiratory diseases

Another method to be commented is the thoracic surgery with the denervation of lungs as a treatment of bronchial asthma [78-80] depicted as “the most accepted procedure” in the Guidelines by the Ministry of Health [81]. Among others, the “skeletonization” of pulmonary roots with transection of nerves, auto-transplantation of lungs (complete separation with immediate re-implantation) or cross-section of trachea with subsequent suturing were applied [80,82,83]. The theoretical ground was the hypothesis that denervation “prevents abnormal nervous impulsation” [78]. Such argumentation was usual at that time, when the so-called ideas of nervism, based on the concept of trophic function of nerves, were officially promoted. Exaggerated histological descriptions of “dystrophy” or degeneration in the structures of the autonomic nervous system, claimed to be irreversible, were presented as a theoretic basis of the denervation [78,84]. Stepan Babichev, the main protagonist of the asthma surgery, was a first generation military surgeon, later the chancellor of Moscow Medical Stomatological Institute (currently named University) and assistant of the Health Minister. The surgical treatment of asthma was officially recommended by the

Ministry of Health; whereas thoracotomy with lung denervation was designated as “the most accepted surgical treatment” [81]. The skeletonization was advocated for steroid-dependent and infectious-allergic asthma forms [81,85]. Repeated bronchoscopies were applied post-surgery because of the bronchial drainage impairment [80]. The overuse of bronchoscopy in children and adults has been discussed elsewhere [86]. The pulmonary denervation and lung resections were recommended also for asthma cases when drug and inhalation therapy had been efficient. It was suggested that medical treatment prior to the operation must be limited in time [81]. In one study, indications for surgery were found in 41.7% of 986 asthma patients; 457 operations were performed with complications recorded in 58 (12.3%) of the cases. The following adverse effects were observed: in 27 patients – inflammatory complications; 12 – neurological symptoms including dysphagia, vocal fold palsy or Horner syndrome; 11 – pulmonary complications such as pneumonia, empyema, pneumothorax, 8 – bleeding and/or local circulatory derangements; 2 cases of paraplegia and hemiparesis; 6 patients died within 32 days after the operation [87].

In 2002, the surgical modality was still in use [79]. Denervation was sometimes performed simultaneously with lung resection, lobectomy or bilobectomy [88]. In this connection, a quote from the recommendations of the Health Ministry deserves attention: “The widespread concept that indication for surgery in asthma is the ineffectiveness of conservative therapy is incorrect. The presence of foci of chronic inflammation in the lungs and bronchi, even with a good effect from medical treatment, is an indication for surgery. Delaying the operation serves to involve other parts of the bronchial tree in the inflammatory process, enhances the degree of allergy, degenerative changes in the innervation apparatus and endocrine organs” [81]. Such instructions could lead to resections without sufficient indications. As mentioned above, the denervation surgery was sometimes combined with removal of pulmonary segments or lobes regarded by the operators as pathologically altered [81]. Lung resections in asthma were applied also without denervation, even in the cases where drug and inhalation therapy were effective. Among indications for the surgical treatment have been focal lesions: chronic pneumonia, bronchiectasis and “bronchitis deformans” [89]. Sokolov and co-workers reported that $\leq 10\%$ of their asthma patients had been operated on [90]. The operations were performed also in patients with bilateral inflammatory or fibrous lesions, both in exacerbations and in remissions, supposed to be indicated for a radical treatment of asthma. This concept was propagated by Fedor Uglov, who claimed a “resection of infected foci” to be the aim of asthma management [89,91]. The therapy was based on his belief that “in 98% of cases, the cause of asthma is focal chronic pneumonia” [89]. Asthma patients were

transferred from medical departments for the surgical and endoscopic treatment. “After a course of therapeutic bronchoscopies”, Uglov and co-workers performed resections of the parts of lungs regarded by them to be pathologically changed [89,91]. Resections were applied to children with recurrent bronchitis and/or pneumonia; while particular efficiency of pneumonectomy was stressed, also in bilateral chronic pneumonia [92]. The recommendation for progressive chronic pneumonia was “lobectomy for segmentary lesions and pneumonectomy in all other patients” [93]. The claimed purpose of the operation was the removal of focal infection. Localized chronic pneumonia with bronchial lesions was by itself regarded to be indication for lung resection [89,91]. Reportedly, “dysontogenetic” lung diseases in children were a more frequent indication for radical surgery than acquired conditions; whereas lobe- and pneumonectomies were predominantly applied [94]. Irina Esipova and co-workers found malformations in 66% (including bronchial diverticulosis in 64%) of resected specimens from children operated on for relapsing pneumonia or “bronchitis deformans” [95] (Figure 1). The same authors claimed that, contrary to preceding publications, the changes in the lungs were not diffuse but local, thus justifying resections. Professor Esipova, a well-known expert often cited in Russia, contended that misdiagnosis of malformations as chronic bronchitis led to undue postponements of lung resections [95]. In accordance with this doctrine, pathologists described in resected lobes and segments inflammatory infiltration, fibrosis, dystrophy and malformations without specifying their extent and severity, while descriptions deviated from those in standard editions on pulmonary pathology, histological specimens being poor quality (Figure 1) [95,96]. Contemporary international literature was referenced scarcely in suchlike papers.

Histological images described as lung malformations in children: top adapted from [95], middle and bottom from [96], commented in the text. The nature, extension and clinical significance of these lesions are unclear. Some proposed criteria of malformations were formulated and illustrated unconvincingly: large bronchi with uneven, serrated (jagged) contours, bush-like aggregations of small bronchi and bronchioles, variously differentiated mesenchyme with lymphoid infiltration, rhythmic muscular fascicles, local agenesis of alveoli represented by connective tissue, abnormal tissues alternating with normal structures, etc. (Figure 1) [96]. Reading descriptions by Esipova and co-workers, it is evident an ex-Soviet pathologist that some resected pulmonary lobes or segments were not significantly abnormal: macroscopically whitish foci and coal pigment, singular cysts 2-3 mm; microscopically atypical bronchial branching, lack of a bronchus narrowing from the center to periphery, “nudity” of bronchi, hypoplasia of bronchial walls, abnormal epithelial cilia, and so forth [95]. Descriptions of this kind were sometimes used

for largely normal specimens; clinical significance of the findings being unclear. However, such reports from pathology departments were suitable to justify resections. Undoubtedly, in some cases the surgery was indicated; but there has been an overtreatment tendency. It was rightly noted that many authors made no distinction between congenital malformations and developmental variants [97]. In a more recent publication an opinion was expressed that some histological phenomena described as malformations are common in postnatal lungs normally or after resolved pneumonia [98]. It was also noticed that diagnostics of lung malformations was difficult; the percentage of wrong diagnoses amounting to 65-75% [99]. Nevertheless, the patients were operated based on the assumption that inflammatory complications are inevitable in future [99]. Concluding their articles, some pathologists generalized that the “disease that affects children in the first year of life, against the background of morpho-functional immaturity of the lungs, intense metabolic processes and imperfection of local nonspecific and immunological defense, is accompanied by a breakdown of typical protective reactions, impaired regeneration and postnatal development of the lungs, excessive expression and rapid depletion of compensatory and adaptive processes. The latter underlies the alterative-exudative changes, the impossibility to delimit inflammation, determines the progressive course of bronchiectasis and requires surgical treatment at the age of 2-6 years (emphasis added)” [100]. An overuse of surgery in tuberculosis and/or alcoholism has been discussed elsewhere [12,101].

Cauterization of Ectocervix

Electro- and thermocoagulation of cervical ectopy, regardless of the presence of epithelial dysplasia, has been routinely applied in Russia. It should be commented that cervical ectopy or ectropion is called pseudo-erosion (colloquially erosion) in Russia, while the term ectropion is mainly used for the cervix eversion after delivery. The ectopy per se was regarded to be precancerous or “predisposing” to cancer [102-104]. Cylindrical endocervical-type epithelium and mucous glands within the ectopy were designated as “pathological tissue” that must be removed [105]. It was also claimed that cervical pseudo-erosions contribute to infertility and complications of pregnancy [106]. Cervical erosions and pseudo-erosions were found at mass preventive checkups (so-called dispensarisations [107]) and coagulated by electro- or thermocautery [108,109]. It occurred in accordance with the Soviet-time concept of prophylaxis priority in the healthcare. It was recommended to start the treatment of pseudo-erosions possibly early, while large lesions were to be treated by “diathermoconization” by means of an electrocautery electrode [104], a procedure associated with complications [110]. It should be noted that according to the international literature, in many

women during the reproductive period, the mucin-secreting columnar epithelium of the end cervix is present on the cervical surface, forming the end cervical ectropion or cervical ectopy, which is considered to be normal [111]. At the same time, Pap smears have been performed rarely and not up to the quality standards, cervical cancer being diagnosed later than in other developed countries [112]. Ablative methods are advertised and recommended by some contemporary Russian-language literature; images and references are in [113]. For example, relapsing end cervical ectopy without epithelial dysplasia has been presented as an indication for cryotherapy although this method impedes histological examination [114]. Other experts recommend laser, cryo- or electrocoagulation for acquired endocervical ectopy [115]. For leukoplakic without cell atypia a loop excision is recommended [116]. Some medical practices possess only one device for ablative therapy [114] and use it sometimes with questionable indications (Figures 2, 3).

Conclusion

Factors contributing to the use of invasive procedures with questionable indications have included the partial isolation from international scientific community, insufficient consideration of the principles of professional autonomy, informed consent and scientific polemics, as well as paternalistic attitude to patients. Today, the growing economy enables acquisition of modern equipment; and research is stimulated by the state. Under these conditions, the purpose of this review was to remind that, performing surgical or other invasive procedures, the risk-to-benefit ratio must be kept as low as reasonably possible. Insufficient international coordination of medical studies and partial isolation from the scientific community may lead to parallelism in research with repetition of studies on a low quality level, unnecessary experimentation, and application of invasive procedures without sufficient indications. Considering shortcomings of medical practice, research and education, governmental directives and increase in funding are unlikely to be a solution. Measures for improvement of the healthcare in Russia must include participation of authorized foreign advisors.

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