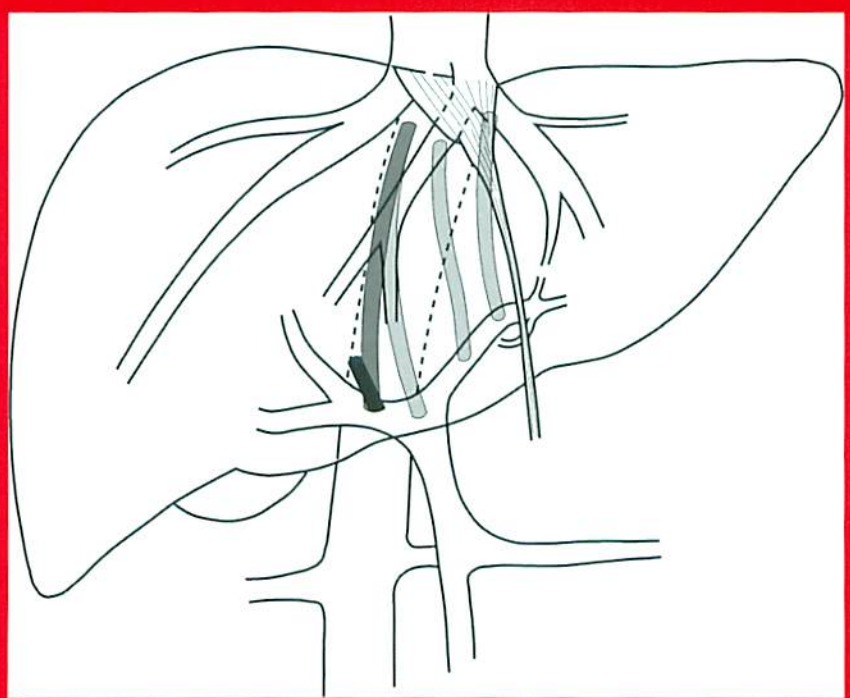
The Official Journal of the American Association of Clinical Anatomists, the British Association of Clinical Anatomists, the Australian and New Zealand Association of Clinical Anatomists, & the Anatomical Society of Southern Africa

CLINICAL ANATOMY

Volume 21, Number 2, 2008



WILEY-BLACKWELL

ISSN 0897-3806

CLINICAL ANATOMY

The Official Journal of the American Association of Clinical Anatomists, the British Association of Clinical Anatomists, the Australian and New Zealand Association of Clinical Anatomists, & the Anatomical Society of Southern Africa

SCOPE: The goal of **Clinical Anatomy** is to provide a medium for the exchange of current information between anatomists and clinicians. This journal embraces anatomy in all its aspects—gross, histologic, developmental, and neurologic—as applied to medical practice. Furthermore, the journal assists physicians in keeping abreast of new methodologies for patient management and informs educators of new developments in clinical anatomy. **Clinical Anatomy** provides a regular outlet for a variety of innovations in education including, but not limited to, computer assisted learning, new teaching materials, films, video tapes, research in education, electronic conferencing, reviews of software, creative approaches to teaching, and previews of new technologies in anatomy. Your contributions are invited for publication. They should be forwarded to Dr. Stephen W. Carmichael, Editor-in-Chief, Mayo Clinic, Rochester, MN 55905, or to Dr. Stuart McDonald, BACA Editor, Anatomy Department, University of Glasgow, Glasgow, Scotland G12 8QQ.

NEW: ELECTRONIC FEATURE: Clinical Anatomy offers online tables of contents and abstracts at www.interscience.wiley.com. Additional information regarding the Associations can be found on the AACA website at www.clinicalanatomy.org and BACA website at www.liv.ac.uk/HumanAnatomy/BACA.html.

CLINICAL ANATOMY (Print ISSN: 0897-3806; Online ISSN: 1098–2353 at Wiley InterScience, www.interscience.wiley.com) is published eight times a year in January, March, April, May, July, September, October, and November by Wiley-Liss, Inc., through Wiley Subscription Services, Inc., a Wiley Company. Editorial office fax (507) 284-5075. Periodicals postage paid at Hoboken, NJ and at additional mailing offices. **Send subscription inquiries in care of:** John Wiley & Sons, Inc., Attn.: Journals Admin Dept UK, 111 River St., Hoboken, NJ 07030, (201) 748-6645. **Advertising inquiries** should be addressed to: Advertising Sales Manager, c/o Wiley-Liss, Inc., 111 River St., Hoboken, NJ 07030, (201) 748-8832, fax (201) 748-6207. **Offprint sales and inquiries** should be directed to the Customer Service Department c/o John Wiley & Sons, Inc., 111 River St., Hoboken, NJ 07030, (201) 748-8776. **Subscription price:** Volume 21, 2008 (eight issues). Print only: $3629.00 in the US; $3741.00 in Canada and Mexico; $3797.00 outside North America. For all other prices please consult the journal's website at www.interscience.wiley.com/ca. All members of the AACA and BACA will receive **CLINICAL ANATOMY** as part of their membership dues. All subscriptions outside the US will be sent by air. Payment must be made in US dollars drawn on a US bank. **Change of Address:** Please forward to the subscriptions address listed above 6 weeks prior to move; enclose present mailing label with change of address. **Claims for Missing Issues:** Claims for undelivered copies will be accepted only after the following issue has been received. Please enclose a copy of the mailing label or cite your subscriber reference number in order to expedite handling. Missing copies will be supplied when losses have been sustained in transit and where reserve stock permits. Send claims in care of John Wiley & Sons, Inc., Attn.: Journals Admin Dept UK, 111 River St., Hoboken, NJ 07030. **Cancellations:** Subscription cancellations will not be accepted after the first issue has been mailed. **Indexed by:** Biotechnology & Bioengineering Abstracts, Cambridge Scientific Abstracts, CSA Biological Sciences Database, Current Contents/Clinical Medicine, EMBASE/Exerpta Medica, Index Medicus/MEDLINE/PubMed, Journal Citation Reports/Science Edition, Reference Update, Science Citation Index, Science Citation Index Expanded, SCOPUS VINTI, Web of Science. **Postmaster:** Send change of address to Clinical Anatomy, Subscription Systems and Distribution, c/o John Wiley & Sons, Inc., 111 River St., Hoboken, NJ 07030.

Clinical Anatomy 21:215-216 (2008)

Letter to the Editor

More Respect for Anatomy in Hernia Repair, Please!

To the Editor, *Clinical Anatomy*:

For more than 60 years, medical students and young doctors have learned inguinal anatomy from anatomy textbooks and hernia reference books that contain errors with regard to major structures of the inguinal canal, which are essential for correct hernia repair. Patients or family practitioners may have wondered why, after hernia repair, patients are sometimes painfully bent forward in the vertebral column. Robert Acland, Professor of Surgery at the Department of Surgery, University of Louisville, Kentucky (2008), has commendably pointed out the fact that it has been known for 60 years that the obliquus internus and transversus abdominis muscles do not attach to the inguinal ligament, but to a thickened band of the ilio-psoas fascia, as published by McVay and Anson (1940) and Condon (1964). I take this opportunity to discuss, in a compact way, these findings, which should gain acceptance in modern textbooks. For example, the latest editions of German textbooks of anatomy (Thiel, 1996; Benninghoff and Drenckhahn, 2002; Lippert, 2006), textbooks of surgery (Breitner, 1997), and hernia reference books (Schumpelick, 2000) still contain the wrong anatomical description, whereas Sabistons textbook of surgery (Turnage et al., 2004) contains the correct description.

Critics have noted that anatomical descriptions may sometimes be misleading or erroneous (Lytle, 1979). However, in recent years, some surgeons have praised the renunciation of anatomical dissection of the groin in hernia repair as progress—"We believe that ... decreased dissection are the most important reasons for greater patient comfort" (Rutkow and Robbins, 1993). It cannot be ignored that this exact philosophy may have lead to a lower familiarity with groin anatomy among residents in surgery (Banks and Cotlar, 2005). This lack of anatomical knowledge and the pushing through of certain hernia techniques for all patients—no matter what individual situation may be present—may be responsible for the occurrence of some of the complications which were discussed in relation with these techniques (LeBlanc, 2001). Nowadays, surgeons are suffering from severe time restrictions in the operating room and are looking to find time-saving operating techniques (e.g., those that last 20 min or less) (Millikan et al., 2003). Unfortunately for both patient and doctor, careful anatomical dissection is time consuming, even though it is the best method of preventing recurrence and complications (Lowham et al., 1997; Shouldice, 2003; Banks and Cotlar, 2005). This reductional surgical groin philosophy may tempt the surgeon to think that he/she can solve the patient's groin problems by a simple "fill-the-gap-technique," be it from inside (TEP-TAPP) (Totte et al., 2005; Vidovic et al., 2007) or from outside (Mesh-Plug) (Rutkow and Robbins, 1993; Jeans et al., 2007), but in the case of anatomical variations and/or invisible changes of anatomical structures, this may not be a sufficient technique. Long-term pain and reduced quality-of-life for the patient will follow (Holzheimer and Gresser, 2007). We should not forget that the anatomical-physiological dissection and repair of the groin hernia represents the traditional heritage of scientific surgeons over the past 100 years (Nyhus, 2004). The appreciation of this may preserve the valve function of the inguinal canal (Cherner, 1934; Desarda, 2003), prevent hernia recurrence and complication, and give the patient a higher quality-of-life without chronic pain. That is why attention should be given to the individual variation in groin anatomy (Stolic, 1977), and the technique should remedy the structural failure rather than adhere to the surgical routine (Cherner, 1934). As Koontz (1956) advised, "Make the operation fit the patient. Don't try to make the patient fit the operation."

R. G. Holzheimer*
Ludwig-Maximilians Universität München
Hernia Clinic Saueslach
Sauerlach, Germany

REFERENCES

Acland RD. 2008. The inguinal ligament and its lateral attachments: Correcting an anatomical error. Clin Anat 21:55-61.

Banks SB, Cotlar AM. 2005. Classic groin hernia repair...lest we forget. Curr Surg 62:249-252.

*Correspondence to: René Gordon Holzheimer, MD, Professor of Surgery, Ludwig-Maximilians Universität München, Hernia Clinic Saueslach, Tegernseer Landstr. 8, D-82054 Sauerlach, Germany. E-mail: gresser.holzheimer@web.de

Received 26 October 2007; Accepted 12 November 2007

Published online 31 December 2007 in Wiley InterScience (www.interscience.wiley.com). DOI 10.1002/ca.20575

Benninghoff A, Drenckhahn D. 2002. Anatomie 16. München: Auflage Urban und Fischer.

Breitner B. 1997. Chirurgische Operationslehre Band VII Chirurgie der Körperoberfläche Hrs. Bruch H-P. Verlag München: Urban und Schwarzenberg.

Cherner M. 1934. Indirect inguinal hernia in the light of the newer interpretation of anatomy. Ann Surg 99:577-584.

Condon RE. 1964. The anatomy of the inguinal region and its relationship to groin hernias. In: Nyhus LM, Harkin HN, editors. Hernia. Philadelphia: Lippincott. p 14-56.

Desarda MP. 2003. Surgical physiology of inguinal hernia repair—A study of 200 cases. BMC Surg 3:2.

Holzheimer RG, Gresser U. 2007. Inguinal hernia vs. arthritis of the hip in sporting adolescents—Case report and review of the literature. Eur J Med Res 12:314-319.

Jeans S, Williams GL, Stephenson BM. 2007. Migration after open mesh plug inguinal hernioplasty: A review of the literature. Am Surg 73:207-209.

Koontz AR. 1956. Views on the choice of operation for inguinal hernia repair. Ann Surg 143:868-880.

LeBlanc KA. 2001. Complications associated with the plug-and-patch method of inguinal herniorrhaphy. Hernia 5:135-138.

Lippert H. 2006. Lehrbuch Anatomie 7. München: Auflage Urban und Fischer.

Lowham AS, Filipi CJ, Fitzgibbons RJ, Stoppa R, Wantz GE, Felix EL, Crafton WB. 1997. Mechanisms of hernia recurrence after preperitoneal mesh repair: Traditional and laparoscopic. Ann Surg 225:422-431.

Lytle WJ. 1979. Inguinal anatomy. J Anat 128:581-594.

Mc Vay C, Anson BJ. 1940. Aponeurotic and fascial continuities in the abdomen, pelvis and thigh. Anat Rec 76:213-231.

Millikan KW, Cummings B, Doolas A. 2003. The Millikan modified mesh-plug hernioplasty. Arch Surg 138:525-530.

Nyhus LM. 2004. Classification of groin hernia: Milestones. Hernia 8:87-88.

Rutkow IM, Robbins AW. 1993. Tension-free inguinal hemiorrhaphy: a preliminary report on the mesh plug technique. Surgery 114: 3-8.

Schumpelick V. 2000. Hernien. Stuttgart: Thieme Verlag.

Shouldice EB. 2003. The Shouldice repair for groin hernias. Surg Clin North Am 83:1163-1187.

Stolic E. 1977. Morphological and structural variations of the human inguinal region. Arch Anat Histol Embryol 60:111-138.

Thiel W. 1996. Photographischer Atlas der Praktischen Anatomie I Bauch Untere Extremität. Berlin: Springer Verlag.

Totte E, van Hee R, Kox G, Hendrickx L, van Zwieten KJ. 2005. Surgical anatomy of the inguinal region: Implications during inguinal laparoscopic herniorrhaphy. Eur Surg Res 37:185-190.

Turnage RH, Li Benjamin DL, McDonald JC. 2004. Abdominal wall, umbilicus, peritoneum, mesenteries, omentum, and retroperitoneum. In: Townsend M, Beauchamp RD, Evers BM, Mattox KL. (eds.) Sabiston Textbook of Surgery. 17th Ed. Philadelphia: Elsevier Saunders. p 1171-1197.

Vidović D, Kirac I, Glavan E, Filipović-Cugura J, Ledinsky M, Bekavac-Beslin M. 2007. Laparoscopic totally extraperitoneal hernia repair versus open lichtenstein hernia repair: Results and complications. J Laparoendosc Adv Surg Technol A 17: 585-590.

Letter to the Editor

To the Editor, *Clinical Anatomy*:

I appreciate Dr. Holzheimer's affirmation of the findings of McVay and Anson (1940) and Condon (1964), which I have recently reconfirmed.

These findings may be slow to gain acceptance in German language textbooks, since many anatomy texts in German, unlike those in English, still consider the ilio-psoas fascia to be a component of the inguinal ligament. With that understanding, unhelpful as it is, one would be consistent in saying that the lowest fibers of the internal oblique and transversus abdominis muscles arise from "the inguinal ligament." Even so, the description would create a poor understanding of this intricate region.

Dr. Holzheimer paints a bleak picture of trends that he sees in surgery, citing anatomical carelessness, haste, and an inappropriate uniformity of approach for bad results.

Anatomists cannot change all of these ills, but there are ways we can help. We can return to the real source of knowledge, the human body, and look at the facts for ourselves. We can concern ourselves with effective ways to present anatomical knowledge in a memorable, time-efficient way to those who need it, when they need it. And we can stop idly copying and amplifying from book to book the textual and illustrative errors of the past, by which process the quality of anatomical knowledge can only be diminished.

Robert D. Acland*
Professor of Surgery
Division of Plastic and Reconstructive Surgery
Department of Surgery
University of Louisville
Louisville, Kentucky

REFERENCES

Condon RE. 1964. The anatomy of the inguinal region and its relationship to groin hernias. In: Nyhus LM, Harkins HN, editors. Hernia. Philadelphia: Lippincott. p 14–56.

Holzheimer RG. 2008. More respect for anatomy in hernia repair, please! Clin Anat 21:215–216.

McVay C, Anson BJ. 1940. Aponeurotic and fascial continuities in the abdomen, pelvis and thigh. Anat Rec 76:213–231.

*Correspondence to: Robert D. Acland, Division of Plastic and Reconstructive Surgery, Department of Surgery, University of Louisville, 324 M.D.R. Building, Louisville, Kentucky 40205, United States. E-mail: bob.acland@louisville.edu

Received 16 November 2007; Accepted 20 November 2007

Published online 26 December 2007 in Wiley InterScience (www.interscience.wiley.com). DOI 10.1002/ca.20577

Clinical Anatomy 21:218–220 (2008)

Letter to the Editor

Comment on "The Relationship of the Posterior Inferior Cerebellar Artery to the Cranial Nerves VII–XII"

To the Editor, *Clinical Anatomy*:

Saylam et al. (2007) are to be congratulated for their recent article on the relationship of the posterior inferior cerebellar artery (PICA) with the cranial nerves, with particular reference to the microsurgery of this region. However, we would like to bring some additional observations to the attention of the authors.

The study of the vessels of the brain base is one of our fields of research (De Caro et al., 1990, 1991, 1995, 1996, 1998, 2000; Porzionato et al., 2004; Macchi et al., 2005; Parenti et al., 2005). We studied the PICA on 40 autoptic brains (Macchi et al., 2004), and we were able to analyze the origin and the whole course of 80 PICAs, with reference to the five segments described by Lister et al. (1982), which were recognizable on both sides. It is a pity that Saylam et al. (2007) analyzed 40 PICAs of 25 cadavers, limiting their study to only two segments, i.e., the anteromedullary and the lateromedullary. In their results, the relationships of the PICA with the cranial nerves are listed following the number of cranial nerve ["(1) course of the LM segment of the PICA and its relationship to the facial and vestibular nerves; (2) relationship between the origin of the PICA and its course relative to the rootlets of the glossopharyngeal, vagus, and accessory nerves; (3) relationship between the rootlets of the hypoglossal nerve and the PICA], rather than to the topographical course of the PICA, which would be clinically useful (origin and relationship of the PICA and hypoglossal rootlets; lateromedullary segment of the PICA; relationship between the PICA and the glossopharyngeal, vagus, and accessory nerves; tonsillomedullary and telovelotonsillary segments' bifurcation). The former way of presentation has led the authors to a misinterpretation of the results of Macchi et al. (2004). Indeed, Saylam et al. (2007) discuss that the relationship of the PICA with the vagus nerve "is somewhat variable" with respect to the patterns of the course proposed by Macchi et al. (2004), who found that if the artery originates at a caudal level, it tends to pass below the vagus nerve and that if it originates from the basilar artery (BA), it passes above that nerve. In reality, the caudal level of the origin of the PICA corresponds to the lateromedullary segment of the vertebral artery (VA), and the data reported in Table 2 of the paper by Saylam et al. (2007) makes it clear that when the PICA originates from the lateromedullary segment of the VA, it is located in all the cases (10/10) below the vagus nerve. Thus, the findings of Saylam et al. (2007), adding 10 further new cases, confirm our hypothesis (Macchi et al., 2004). Moreover, Saylam et al. (2007) report that they found only one PICA originating from the BA and passing between the IX and X cranial nerves, as shown in Figure 2; however, Figure 7 shows one more PICA originating from the BA, and passing above the IX cranial nerves. On the other hand, they did not consider it relevant to provide figures of PICAs originating from the BA and passing below the X cranial nerves.

Clinical-anatomic research is using computed tomography angiography (CTA) to map the vasculature in anatomical districts' study (Tregaskiss et al., 2007). Huynh-Le et al. (2004) reported that three-dimensional CTA demonstrates the surgical anatomy of VA-PICA aneurysms in detail, and it is very useful in selecting the optimal surgical approach. Our team is evaluating the course of the PICA in vivo by computed tomography. From our anatomoradiological database (Section of Radiology, Euganea Medica, Italy) six CTAs of the brain vessels (three males, three females; mean age, 54.6 years) were selected. The subjects underwent radiological examination for atherosclerotic pathology of the vessels of the circle of Willis. The CT images were obtained with a 16-slice multidetector CT scanner (Lightspeed16; GE Medical System, Milwaukee, WI) with the parameters (group 1; rotation time, 0.7 sec; thickness, 2.5 mm; table increment, 27/50; field of view, large; kV 140; 380 mA) acquired during the injection of the contrast medium (concentration of 350 mg I/ml, Omnipaque, GE Healthcare, distributed by Amersham Health, Princeton, NJ). A timing-bolus technique was applied to determine the delay time of scanning with a preinjection of 20 ml of contrast media at a flow rate

*Correspondence to: Prof. Raffaele De Caro, Section of Anatomy, Department of Human Anatomy and Physiology, University of Padova, Via A Gabelli 65, 35127 Padova, Italy.
E-mail: rdecaro@unipd.it

Received 8 December 2007; Accepted 7 January 2008

Published online 15 February 2008 in Wiley InterScience (www.interscience.wiley.com). DOI 10.1002/ca.20603