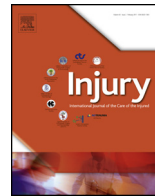




Contents lists available at ScienceDirect

Injury

journal homepage: www.elsevier.com/locate/injury



The prevalence and morphology of the corona mortis (Crown of death): A meta-analysis with implications in abdominal wall and pelvic surgery

Beatrice Sanna^{a,b}, Brandon Michael Henry^{a,c,*}, Jens Vikse^{a,d}, Bendik Skinningsrud^{a,c}, Jakub R. Pękala^{a,c}, Jerzy A. Walocha^{a,c}, Roberto Cirocchi^e, Krzysztof A. Tomaszewski^{a,c}

^a International Evidence-Based Anatomy Working Group, Krakow, Poland

^b Faculty of Medicine & Surgery, University of Cagliari, Sardinia, Italy

^c Department of Anatomy, Jagiellonian University Medical College, Krakow, Poland

^d Division of Medicine, Stavanger University Hospital, Stavanger, Norway

^e Department of Surgical Sciences, University of Perugia, Italy

ARTICLE INFO

Keywords:

Corona mortis
Obturator vessels
Hernia repair
Pelvic lymphadenectomy
Retropubic region
Pelvic fracture
Vascular anatomy

ABSTRACT

Purpose: Corona mortis is a highly variable vascular connection between the obturator and external iliac or inferior epigastric arteries or veins located behind the superior pubic ramus in the retropubic space (space of Retzius). Due to the significant variation in this collateral circulation, detailed anatomical knowledge of the corona mortis is vital to enhance the prevention of possible iatrogenic errors in hernia repair and other pubic surgical procedures. The aim of our meta-analysis was to provide comprehensive data on the prevalence, anatomical characteristics, and ethnic variations of the corona mortis vessel. **Methods:** An extensive search was conducted through the major electronic databases to identify eligible articles. Data extracted included investigative method, prevalence of the corona mortis vessels among hemi-pelvises (overall, arterial only, venous only, and combined), distance from the corona mortis to pubic symphysis, and assessment of gender, side, laterality, and ethnicity subgroups. **Results:** A total of 21 studies (n = 2184 hemi-pelvises) were included in the meta-analysis. The overall prevalence of the corona mortis in hemi-pelvises is high (49.3%). A venous corona mortis is more prevalent than an arterial corona mortis (41.7% vs. 17.0%). The corona mortis is more common in Asia (59.3%) than in Europe (42.8%) and North America (44.3%). **Conclusions:** As a corona mortis is present in an about half of all hemi-pelvises, it is important to consider the possibilities of its presence when undertaking surgical procedures and plan accordingly to avoid injuries. All surgeons operating in the retropubic region should have a thorough understanding of the anatomical characteristics and surgical implications of a corona mortis.

© 2017 Published by Elsevier Ltd.

Introduction

The definition of corona mortis is heterogeneous in the literature. This variability has caused discrepancies in the data of studies investigating this collateral circulation¹. Darmanis et. al describes a corona mortis as a vascular connection between the obturator and external iliac or inferior epigastric arteries or veins located behind the superior pubic ramus in the retropubic space (space of Retzius) [1] (Fig. 1).

Communicating vessels that traverse the superior pubic ramus are variously referred to as aberrant, anomalous, communicating,

or variant vessels, or pubic branches of the obturator or inferior epigastric vessels [2]. However, not all of these vessels connect the obturator artery to the external iliac system, and thus, not all constitute a corona mortis vessel. Therefore, we define corona mortis as any abnormal anastomotic vessels between the external iliac and the obturator systems, excluding aberrant obturator arteries, as these originate from the external iliac artery or inferior epigastric artery and pierce the obturator membrane, not participating in the anastomosis [1].

Corona mortis varies extensively in terms of whether it is an arterial or venous connection, or both, as well as its laterality, side, and distance to pubic symphysis. The reported prevalence rates of venous and arterial types of corona mortis is highly variable, however, the venous type has consistently been reported to be more common than the arterial type [3–10]. Moreover, the corona mortis is located at a variable distance from the pubic symphysis,

* Corresponding author at: Department of Anatomy, Jagiellonian University Medical College, 12 Kopernika Street, 31-034, Krakow, Poland.
E-mail address: bmhenry55@gmail.com (B.M. Henry).

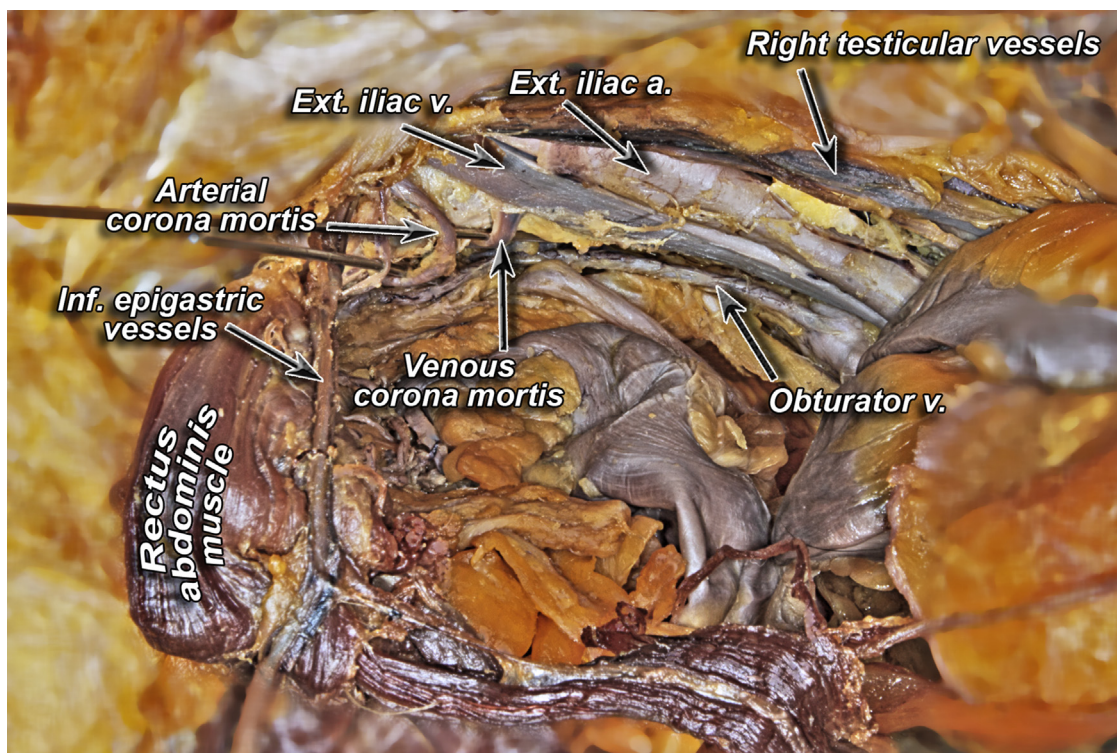


Fig. 1. Corona Mortis with both arterial and venous anastomosis.

with reported means ranging from 21 mm [7] to 90 mm [10]. Due to the significant variation in this collateral circulation, detailed anatomical knowledge of corona mortis is vital to enhance the prevention of possible iatrogenic errors in pubic region surgical procedures.

The term corona mortis, or crown of death, reflects the clinical significance of this anatomical variant. Laceration of this collateral circulation may result in catastrophic bleeding, as the anastomotic vessels connect two high-volume systems that may retract into the obturator canal [2]. It has been reported to be a potential risk factor for significant hemorrhage in pelvic fractures [11–14], pelvic and acetabular surgeries [1,15,16], TVT-Secur procedures [17,18], surgery for paravaginal defects [19], oncological pelvic dissections [20], and conventional and laparoscopic hernia repair [21].

Studying vascular variations in corona mortis is crucial because of its association with a high risk of severe hemorrhage in hernia repair and other surgical procedures. Accurate anatomical knowledge of corona mortis may aid in reducing the incidence of surgical complications and improving the outcome of pubic surgical procedures. The aim of this *meta-analysis* was to systematically analyze and provide comprehensive data on the prevalence, anatomical characteristics, and ethnic variations of the corona mortis.

Methods

Search strategy

An extensive search was conducted through: PubMed, CNKI, Embase, ScienceDirect, Web of Science, SciELO, and BIOSIS, to identify articles eligible for inclusion in our *meta-analysis*. The search terms used were: corona mortis, corone mortis, retro pubic vascular anastomosis, retro pubic vascular communication, obturator artery communication, and obturator artery anastomosis. The

references of all included articles were searched to identify any further relevant articles. No date limits or language restrictions were applied. The authors strictly followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Supplement 1) for the entirety of the *meta-analysis* [22].

Study selection

Study eligibility for inclusion in the *meta-analysis* was independently assessed by two separate reviewers. Studies were considered eligible for inclusion if they (1) provided clear anatomical definitions of corona mortis, (2) reported prevalence data concerning the corona mortis as primary or secondary outcome, and (3) were a cadaveric, imaging, or intraoperative study reporting extractable data. The following exclusion criteria were used: Case reports, editorials, conference abstracts, and studies reporting incomplete or irrelevant data. Articles in languages other than those spoken fluently by the authors were translated by medical professionals fluent in both the language of the original article, and English. All differences of opinion among the reviewers concerning the eligibility of the studies were solved by consensus through consultation with the author of the respective study.

Data extraction

Data from the included studies was independently extracted by two reviewers. Data extracted included investigative method, prevalence of the corona mortis among hemi-pelvises (overall, arterial, venous, and combined), distance from the corona mortis to pubic symphysis, gender, side, laterality, and ethnicity. In the event of disagreement among the authors, consultations with all the authors were conducted by consensus. If discrepancies in the

Download English Version:

<https://daneshyari.com/en/article/8718816>

Download Persian Version:

<https://daneshyari.com/article/8718816>

[Daneshyari.com](https://daneshyari.com)