

## Natural Orifice Surgery Terminology: An Effort to Develop Uniform NOTES Descriptions

### Terminologia Cirúrgica de Orifício Natural: Um Esforço para se desenvolver Terminologias NOTES Padronizadas

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#### ABSTRACT

Contributions to the literature about the new field of natural orifice surgery have increased dramatically in recent years; a lack of standardization of terminology may confuse readers of clinical reports. Thus, a standard and uniform taxonomy is needed for natural orifice surgery. This will foster accuracy and uniformity in series and comparative studies. The Brazilian NOTES Research Group, and the NOTES Committee of the Brazilian Society of Laparoscopic Surgery (SOBRACIL), drawing from the clinical experience of its members, proposes a new terminology for future publications in the field.

**Key words:** Natural orifice surgery; NOTES terminology; Natural orifice endoscopic.

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Natural Orifice Transluminal Endoscopic Surgery (NOTES) is an evolving concept combining techniques of minimally invasive surgery with flexible endoscopy, potentially representing a major paradigm shift to scarless surgery. With the aim of avoiding incision-related complications, researchers make efforts to create even less invasive access by means of transluminal surgery. Since the first research was published in 2004,<sup>1</sup> and proceeding to human research conducted under ethics committee approval,<sup>2-27</sup> natural orifice surgery has been described without uniformity of terminology. Thus, some reports in the literature and conference proceedings do not represent strictly transluminal surgery. Similarly, umbilical surgery

has been sometimes classified as “NOTUS” instead of single port laparoscopy.

As publications in natural orifice surgery evolve, discrepancies about terminology may confuse readers of case and series reports. Thus, the adoption of a standard and uniform natural orifice surgery taxonomy is desirable for future publications, allowing accuracy and uniformity in series and comparative studies. The NOSCARGroup is finalizing a second White Paper on NOTES based on the last Meeting in San Francisco in July 2008, and will include an update of transluminal surgery terminology.

With the aim of clarifying the range of these exciting new developments, the Brazilian NOTES Research Group met in Rio de Janeiro in December

2008 to establish a consensus about terminology. The group recommended dividing the NOTES classification for procedures into four categories:

**(1) Totally NOTES (T-NOTES):** “Pure” NOTES using transluminal flexible or rigid tools without any percutaneous assistance or visualization);

**(2) Hybrid NOTES:** NOTES with mixed technologies using transabdominal instrumentation to facilitate the NOTES procedure, but still using some flexible or rigid tools through a natural orifice for the key parts of the procedure;

**(3) NOTES assisted Laparoscopy:** Laparoscopic surgeries in which only visualization is performed via a natural orifice, i.e. the camera is passed through a natural orifice. Examples include laparoscopic resection of a gastric tumor with endoscopic peroral visualization, or the use of a transvaginal camera for laparoscopic cholecystectomy. Its use has also been described by Tsin et al<sup>28-29</sup> for culdolaroscopy;

**(4) NOSE (Natural Orifice Specimen Extraction):** As proposed by Palanivelu et al,<sup>30</sup> refers to procedures in which the organ/tissue is extracted through a natural orifice after a standard laparoscopic procedure. See previous descriptions in laparoscopic surgeries.<sup>31-35</sup>

Umbilical surgery using different types of Single Port Access should be described as single-trocar laparoscopy, as there is a need for skin and fascia incision, providing postoperative somatic pain instead of visceral pain, and not avoiding incision related complications. The term “NOTUS” (“natu-

ral orifice trans-umbilical surgery) is inappropriate and should be abolished. The umbilicus is a natural scar, not an orifice, and umbilical laparoscopic surgery should be referred to as single access surgery, single port surgery, transumbilical endoscopic surgery (TUES), or laparoendoscopic single site surgery (LESS).<sup>36</sup>

Further classification concerns the use of flexible or rigid endoscopy and tools. As described by Buess et al, NOTES procedures can be divided into **FLEX-NOTES** (involving the use of flexible tools), or **RIG-NOTES** (NOTES using rigid tools only). These distinctions are already relevant for Transanal Endoscopic Microsurgery (TEM) procedures,<sup>37-39</sup> and for natural orifice cholecystectomy surgery using rigid instruments.

As future peer-reviewed publications may generate novel branches of this taxonomy, it will need to be reviewed, expanded and modified periodically.<sup>40</sup> Hopefully, the proposed terminology will promote uniformity needed for studies in this new field.

The future of clinical applications of transvaginal NOTES and its role in mainstream surgery require further research using **prospective** randomized controlled study designs to better understand the benefits and limitations when compared to laparoscopic surgery. The development and application of natural orifice surgery seems to be the next frontier for minimally invasive surgery, and should only be performed by a multidisciplinary team in Institutional Review Board (IRB)-approved studies after extensive experimental training.

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## RESUMO

As contribuições para a literatura sobre o novo campo da cirurgia por orifícios naturais têm aumentado dramaticamente nos últimos anos; a falta de padronização da terminologia pode confundir os leitores de casos clínicos. Assim, uma taxonomia padrão e uniforme é necessária para a cirurgia por orifícios naturais. Isso irá favorecer a precisão e uniformidade nas publicações de série de casos e estudos comparativos. O grupo brasileiro de pesquisa do NOTES e o Comitê de NOTES da Sociedade Brasileira de Cirurgia Laparoscópica (SOBRACIL), partindo da experiência clínica de seus membros, propõe uma nova terminologia para futuras publicações na área.

**Palavras chave:** Cirurgia por orifício natural; Terminologia; NOTES; Endoscopia por orifício natural.

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