

Maurizio Bruni,<sup>1</sup> M.D.

## Anal Findings in Sexual Abuse of Children (A Descriptive Study)

**ABSTRACT:** The aim of this study was to assess anal physical findings in children whose abuse was admitted by the perpetrator. Fifty children were studied in whom medical assessment took place remote in time from anal abuse which was admitted by the perpetrator. Medical assessment included examination to detect the presence of anal physical signs. Most frequent signs were anal scars and tags (either single or multiple) present, respectively, in 84 and 32% of cases. In some cases scars extended to the perianal region. Other signs included reflex anal dilatation (RAD) and venous congestion (VC) found, separately or associated with other signs, in over 33% of the cases. In 6% of the cases there were no abnormal anal findings.

The results confirm earlier reports that physical signs, including scars, tags, RAD, funneled anus and extensive venous congestion, are often present in abused children, singly or in combination, and that anal examination should be undertaken even months after a known or suspected sexual assault. In the legal setting these physical signs are seen in association with anal abuse and support the child's statement. They do not per se provide proof of abuse.

**KEYWORDS:** forensic science, child sexual abuse, buggery, anal findings, fissure, remote sexual abuse, reflex anal dilatation, anal scar, medical examination

Sexual abuse of minors has been increasingly scientifically studied over the past few decades. Anal physical findings, and their interpretation, continue to be discussed (1) and remain an area of controversy with variable significance attributed to them (2–4).

While findings in cases of acute anal abuse are often undisputed, findings in chronic or remote abuse are frequently seen as more controversial. One complicating factor is that examiners prefer different examination positions (5–11). In addition, different views on the interpretation of physical findings, and of what constitutes normal and abnormal findings from studies of so called “nonabused” children, have added to the controversy. It is clear that data coming from these various authors cannot always be compared.

The aim of this study was to contribute to a description of physical findings in remote anal abuse, as previously described by various authors (7,12–14).

### Methods

Cases are reported which were examined by the author over a seven-year period. In all cases there was both a judicial conviction and an explicit or implicit (*patteggiamento*, see below) admission by the perpetrator(s) of anal abuse. In the Italian Legal System the term “*patteggiamento*” refers to plea bargaining resulting in lesser sentence, in return for an (implicit) guilty plea. All children were examined by order of the enquiring magistrate. In Italy the enquiries are made under the supervision of the local district attorney (*Pubblico Ministero*).

In Italy the crime of sexual abuse of children falls under Article 609 *bis*, *ter*, *quater*, *sexies*, *septies*, *octies* of the Penal Code and in-

cludes a wide range of acts of abuse. In some cases there are no physical signs of the abuse to be found on examination, or the signs may have healed.

In this study the term “remote” refers to unique or repeated abuse which occurred since four weeks to 14 months before medical examination.

Penetration was either digital (44 cases) or penile (6 cases).

It is well known that the anal region in children can suffer non-traumatic pathology which leaves signs in some cases similar to those found in cases of abuse: for example, a fissure can be due to a child's severe constipation, or to Crohn's disease (15,16). “Perianal . . . skin lacerations” may be found (17) and can heal, or produce a scar and/or sentinel tag.

From 1996 to March 2002, 209 children were examined by the author for suspected abuse in Northern and Central Italy and Switzerland. In 122 cases the perpetrator was convicted, 81 are still under judgment and in 6 the case was discharged.

From these 209, fifty cases (age range 2–14 years, mean age 8.3 years) were selected. These were the subject of legal proceedings and resolved by *patteggiamento* (49 cases). In one case (no. 38) after conviction (without *patteggiamento*) there was a written admission by the perpetrator.

Children are identified by age and sex, anonymously. All examinations took place at least four weeks after the last sexual assault and not in the immediate acute phase after abuse. Every child was believed to have suffered repeated abuse, lasting from months to years. Girls were examined in collaboration with a gynecologist who had at least two years' experience of sexual abuse assessments. Anal and genital data from the examinations were cross-checked with photographs taken during the examination.

The choice of examination position for the anal inspection varied. In cases examined alone by the author the left lateral position was preferred, especially in the last three years. In cases examined jointly with a gynecologist, the supine and knee-chest positions

<sup>1</sup> Professore a contratto, Università di Brescia, Specialista in Medicina Legale e delle Assicurazioni-Chirurgia generale-Urologia, Via Procaccini 34, 20154 Milano.

Received 9 Feb. 2002; and in revised form 2 Feb. 2003 and 21 June 2003; accepted 21 June 2003; published XXXX.

TABLE 1—Chart of examination findings in 50 children with confirmed remote anal abuse (see text).

Identifier	Age	Sex	Examination Position	Anal Scar Site (Clock Face)	Perianal Scar Site	Tag	RAD	Funneled Anus	VC	Other
1	2	M	P	12	...	...	...	...	...	...
2	3	F	LL	12	...	...	Y	...	Y	...
3	3	F	SUP	...	...	9	...	Y	...	...
4	3	F	SUP	5 + 6	5	...	...	...	...	hymenal notch
5	3	M	LL	6	...	...	Y	...	...	...
6	3	F	SUP	...	...	6	...	...	...	...
7	3	F	SUP + KC	12	6	11	Y	...	...	...
8	3	M	LL	3 + 6	...	...	...	Y	Y	...
9	3	F	LL	...	3 + 9 + 12	...	Y	...	...	...
10	4	M	P	10 + 12	...	...	...	...	...	...
11	4	M	LL + P	10 + 12	...	...	Y	...	Y	shortening of anal canal
12	5	F	SUP	1	...	...	...	...	...	...
13	5	M	SUP + KC	2	...	3	Y	...	Y	...
14	5	F	LL + SUP	2 + 5 + 7	...	...	Y	...	...	hymenal notch
15	5	F	LL + KC	1 + 3 + 6	...	...	...	Y	...	...
16	5	F	SUP	...	...	...	...	Y	...	...
17	6	F	SUP	6 + 12	6 + 12	...	...	Y	Y	...
18	6	F	LL + KC	6	1	...	...	...	Y	...
19	6	F	SUP + LL	2 + 3 + 5 + 7	...	...	Y	...	...	...
20	7	F	SUP	5	...	6 + 11	...	...	Y	...
21	7	F	SUP	6 + 12	...	...	...	...	...	...
22	7	M	LL + KC	12	...	...	...	...	...	...
23	7	F	SUP	7 + 8 + 12	8	...	...	...	...	...
24	8	M	LL + KC	...	10 + 11	4 + 7	...	...	Y	Perianal erythema
25	9	F	SUP	8	...	2	...	Y	...	...
26	9	F	LL + KC	8	...	2 + 10	Y	...	Y	...
27	9	F	LL + SUP	8	...	2	...	...	Y	...
28	10	F	LL	...	12	5	Y	...	Y	...
29	10	F	LL + SUP	5	12	...	Y	...	Y	...
30	10	F	SUP + KC	...	...	...	...	...	...	...
31	10	F	SUP	12	...	...	Y	...	...	...
32	10	F	LL + SUP	1	...	...	...	...	...	...
33	10	F	SUP	...	6	9 + 10	...	...	Y	...
34	11	F	SUP	5	5	10 + 11	Y	...	...	2 notches + leucorrhoea
35	11	F	SUP + KC	5	...	...	...	...	Y	Hymenal notch
36	11	M	LL + KC	3	3	...	...	...	Y	...
37	11	F	SUP	12	...	...	...	...	...	...
38	12	M	LL	6 + 11 + 12	...	...	...	...	Y	...
39	12	M	LL + KC	6 + 12	...	...	...	Y	...	...
40	12	M	LL	...	...	...	...	...	...	...
41	13	F	LL + SUP + KC	6 + 12	...	...	Y	...	Y	Perianal thickening
42	13	F	LL	4 + 6 + 7	6	...	Y	...	...	...
43	13	F	SUP	...	...	9	...	...	...	Hymenal transection
44	13	F	SUP + LL	3 + 6 + 12	...	...	...	...	...	Warts
45	13	F	SUP + KC	6	...	...	...	...	...	...
46	13	F	SUP	4 + 7	7	...	Y	...	...	...
47	14	F	SUP + KC	6 + 12	12	3 + 11	...	...	Y	Warts of labia and vagina; hymenal diameter over 20 mm
48	14	M	LL	11	...	5 + 7 + 9	...	...	...	...
49	14	F	SUP + KC	...	...	4	Y	Y	...	Hymenal transection
50	14	F	SUP + KC	...	...	...	...	...	...	...

RAD = reflex anal dilatation.

VC = venous congestion.

Examination Positions: SUP = supine, LL = left lateral, P = prone, KC = knee chest.

Number of scars: an anal lesion which extends on perianal skin will be counted as a single lesion.

Site: the numbers indicate the position of the lesion(s) as seen clockwise in knee-chest position.

were additionally used. Bacteriological swabs were not routinely taken in these cases.

## Results

There was no history of severe constipation, previous surgery, chemotherapy or Crohn's disease in any child of this group. Table 1 shows the anal findings.

There were 13 males and 37 females whose average age was 8.3 years: 7.5 for males and 8.6 for females (see also Table 2). Buggery (penile/anal penetration) was reported in cases 38, 43, 44, 45, 46, 50 and digital penetration in the remaining cases.

The analysis of signs has been also performed by dividing the children into three age groups: 2–5 years, 6–10 years and 11–14 years, according to Hobbs et al. (7).

The most common anal finding (Table 3 and Fig. 1) was a scar or scars in 42 cases with up to 4 scars), a tag or tags (maximum 3) in 16, venous congestion in 18 (frequently in association with a scar), reflex anal dilatation in 17, funneled anus in 8 (isolated sign in 2). The anus was normal in 3. The site, and number of scars are shown in Table 4; scars from abuse can be found at all positions around the anus.

It is of interest that in two of the older age-group of children and only in one of 6–10 years group there were no signs in the anal region, while all the children of younger age group showed some signs. The gynecological data are summarized in Table 1.

## Discussion

These data represent a wide cross section of cases (50) accumulated mainly in Northern and Central Italy where there has been both a judicial conviction and an admission by the perpetrator of anal abuse of a child or young person. Children of all ages are represented, with a female:male ratio of 3 to 1.

TABLE 2—Distribution of children by age.

2–5 years	16 cases	(6 males–10 females)
6–10 years	17 cases	(2 males–15 females)
11–14 years	17 cases	(5 males–12 females)

TABLE 3—Findings in the anal region (50 cases).

Anal and perianal scar(s)	42 cases
Tag(s)	16 cases
Perianal venous congestion (VC)	18 cases
Reflex anal dilatation (RAD)	17 cases
Funneled anus	8 cases
Normal anal feature	3 cases

In many cases physical signs of abuse were only detected anally, while in others, mainly girls, genital signs were present. Further information on these findings are summarized. They included two cases of complete hymenal transection and two where ano-genital warts (20) were detected; one in the genital and one in the perianal area.

Three cases showed no abnormality in the anal area even though anal abuse was admitted. This is in agreement with other authors (7,21). This condition results probably from the compliance of the child, or care on part of the perpetrator to leave minimal signs that heal rapidly. Cases with no abnormal findings mainly involved older children (11 to 14 years).

Before analyzing the signs it must be pointed out that a fissure, in accordance with Hobbs et al. (7), is defined as “discontinuity in the lining of the anal canal,” which can evolve in recovery, can leave anal scars, or scars which extend beyond the anus, but can also produce a sentinel distal tag (to be distinguished from the congenital tag, typical midline as described by Berenson et al. (18), McCann et al. (9), and Hegeret et al. (11).

RAD was accepted as being present if verified within 30 s, agreeing that “RAD is a dynamic sign and not the visibly relaxed

TABLE 4—Cases with scars (no. 42): number and site (in the midline or not) of scars; the chart (Fig. 1) indicates the number of cases.

Site	1 Scar	2 Scars	3 Scars	4 Scars	Total
Only in the midline	10	6	...	...	16 (38%)
Only out of the midline	11	2	1	1	15 (36%)
In and out of the midline	...	5	6	...	11 (26%)
Total	21 (50%)	13 (31%)	7 (17%)	1 (2%)	42 (100%)

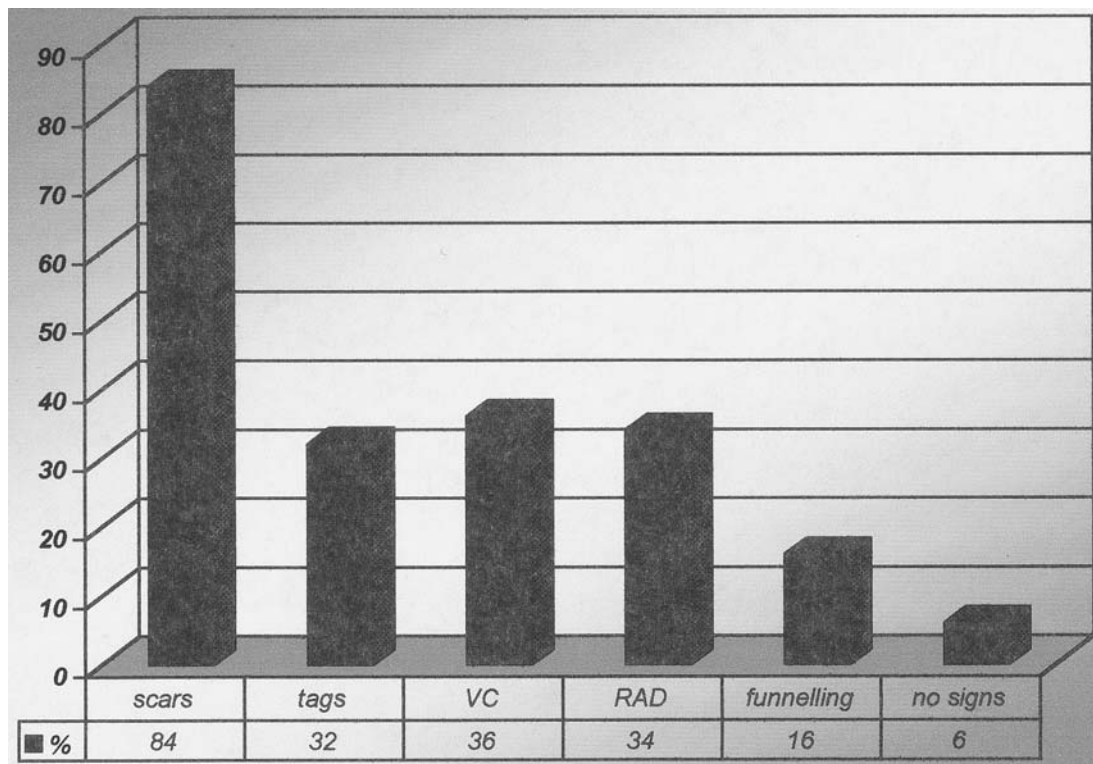


FIG. 1—Percentage of anal signs in abused children.

sphincter" (7), if there was no presence of stool in rectal ampulla and if the diameter was more than 1.0 cm.

Perianal venous congestion (purple, blue to black discolorations perianally, in accordance with Hobbs et al. (7)) was also accepted if it appeared within the first 30 of observation. Funneled anus can be described as "a fixed funnel shape" of anus (7).

Regarding hymenal features; according to Berenson et al. (19) a classified notch was "a U or V-shaped concavity that dipped beneath the baseline," and a bump was "a mound on the membrane that has a width greater than its length."

In 42 cases a scar appears either as a single finding or associated with other signs (Tables 3 and 4). Some attention must be given to the number of scars. Over the past few years there has been an intense debate in Italy regarding the significance of scars and mainly the single scar. It is agreed that constipation is a common cause of fissures, which can result in scars; in this case the most typical area is the anterior midline and the mean age is 2–3 years (16).

Anal abuse can also result in a fissure which may leave a scar and/or skin tag. Such a finding can be either single and situated at 12 or 6 o'clock (i.e., identical to the sites for fissures caused by constipation) or multiple and occurring outside the midline.

A single fissure, and the consequent scar even if single and meridian may indicate previous abuse, if other pathogenic modalities, such as documented severe constipation, Crohn's disease, previous chemotherapy, or local surgery are excluded. The experience here, in agreement with Hobbs et al. (7), is that the significance of a scar as an indicator of possible remote abuse increases if it is multiple, in a site outside the midline (22) or extending away from the anus, and if other signs are present.

Venous congestion was observed at all ages in 36% of cases. According to McCann et al. (9) venous congestion per se should be of no significance in the recognition of abuse, but the present author agrees with Hobbs et al.'s observations (7) on the subject and in particular the affirmation that its presence, when associated with other signs, is supportive of previous abuse, especially if it occurs in the first seconds of the examination (410–12).

The pathogenesis and significance of RAD is debated. It appears with similar frequency to VC (Table 3 and Fig. 1), but RAD is an "uncommon physical sign" in nonabused children (7–24), and its presence is likely to be significant.

Funneled anus is an infrequent finding and appears in 12% of children from 11 to 15 years of age; such data would agree with Hobbs et al. (7) hypothesis that funneling, while uncommon, is more typical of an older boy or girl, but our sample size is insufficient to be conclusive.

Finally, in older children no significant difference in findings was detected between six children who suffered penile, and ten who suffered digital penetration, but the number is too small to allow a statistical analysis.

The data support the importance of a careful anal examination in alleged remote sexual abuse of children, because scars or tags can persist after sexual assault. Scars and tags following abuse can usually be differentiated from causes other than abuse, e.g., severe constipation and Crohn's disease, by their site and number, and by a carefully taken clinical history. The medical examination should be seen as an important supplement to the testimony given by the child.

The greater frequency of physical signs seen in this study, compared with other studies (5), may be due to the careful selection of cases.

A comparative or case-control study with carefully selected "abused" and "nonabused" children is required to assess the importance of physical signs.

### Acknowledgments

Dr. C. J. Hobbs (Leeds, UK) made important suggestions and revised the manuscript; Prof. G Giusti (Rome, Italy) encouraged the author. Without their help this paper could not have been written.

### References

- Lamb EM. The investigation of child sexual abuse: an interdisciplinary consensus statement. *Child Abuse & Neglect* 1994;18(12):1021–8.
- Edgardh K, von Krog G, Ormstad K. Adolescent girls investigated for sexual abuse: history, physical findings and legal outcome. *Forensic Sci Int* 1999;104:1–15.
- Lauritsen AK, Meldgard K, Charles AV. Medical examination of sexually abused children: medico-legal value *J Forensic Sci* 2000;45(1):115–7.
- Adams JA. Evolution of a classification scale: medical evaluation of suspected child sexual abuse. *Child Maltreatment* 2001;6:31–6.
- Hobbs CJ, Wynne JM. Sexual abuse of English boys and girls: the importance of anal examination. *Child Abuse & Neglect* 1988;13:195–210.
- Hobbs CJ, Wynne JM, editors. *Physical signs of child abuse. A colour atlas.* Saunders 1995;15–16.
- Hobbs CJ, Hanks HGI, Wynne JM. *Child abuse and neglect. A clinician's handbook.* Livingstone C, editor. London 1999.
- McCann J. The appearance of acute, healing, and healed anogenital trauma. *Child Abuse & Neglect* 1998;22:605–12.
- McCann J, Voris J, Simon M, Wells R. Perianal findings in prepubertal children selected for nonabuse: A descriptive study. *Child Abuse & Neglect* 1989;13:179–93.
- Adams JA, Harper KE, Knudson S. A proposed system for the classification of anogenital findings in children with suspected sexual abuse. *Adolescent Pediatric Gynecology* 1992;5:73–5.
- Heger A, Emans SJ, Muram D. Evaluation of the sexually abused child. A medical textbook and photographic atlas. Oxford University Press New York-Oxford 2000;190–218.
- Adams JA. Medical evaluation of suspected child sexual abuse. In: Pokorny SF, editor. *Pediatric and adolescent gynecology.* New York: Chapman and Hall, 1996;1–14.
- McCann J, Voris J. Perianal injuries resulting from sexual abuse. *Pediatrics* 1993;84:317.
- Bruni M, Bruni E. Lesività anale nell'abuso cronico sui minori. *Dati preliminari.* *Minerva Med Leg* 2000;120:71–7.
- Paul DM. The pitfalls which may be encountered during an examination for signs of sexual abuse. *Med Sci Law* 1980;30(1):3–11.
- Agnarsson U, Warde C, McCarthy G, Evans N. Perianal appearances associated with constipation. *Archives of Disease in Childhood* 1990;65(11):1231–4.
- Jewell DP, Parkes M, Mortensen N. Crohn's disease. In: Bianchi PG, editor. *Gastroenterology and hepatology.* London: McGraw-Hill, 1999;395–415.
- Berenson AB, Heger AH, Hayes JM. Appearance of the hymen in prepubertal girls. *Pediatrics* 1992;89:387–94.
- Berenson AB, Chacko MR, Wiemann CM, Mishaw CO, Friedrich WN, Grady U. A case-control study of anatomic changes resulting from sexual abuse. *Am J Obstet Gynecol* 2000;183(4):820–34.
- Martinez-Roig A, Sanchez X. El pediatra, el abuso sexual y las verrugas anogenitales en edad prepuberal. *Child Abuse & Neglect* 1996;20(1):55–62.
- Adams JA, Harper KE, Knudson S, Revilla J. Examination findings in legally confirmed child sexual abuse: It's normal to be normal. *Pediatrics* 1994;94:310–7.
- McCann J, Voris J, Simon M. Genital findings in prepubertal females selected for non-abuse: a descriptive study. *Pediatrics* 1990;86(3):428–39.
- AAP—American Academy of Pediatrics. Guidelines for the evaluation of sexual abuse in children. *Pediatrics* 1991;87:254–60.
- Clayden GS. Reflex anal dilatation associated with severe chronic constipation in children. *Arch Dis in Children* 1988;63:832–6.

Additional information and reprint requests:

Maurizio Bruni M.D.  
34, Via Procaccini  
20154 Milano  
ITALY