Stoma Care in the School Setting

Eileen H. Gray, RN, MSN, CPNP; Jodi Blackinton, RN; and Genevieve M. White, RN, MS, CSNT

ABSTRACT: An ostomy is an artificial opening in the body for the purpose of eliminating excretions from a working organ or for providing nourishment. Artificial openings may be from the stomach, intestine, urinary bladder, kidney, or trachea. The stoma is the terminal end of the ostomy, or the opening that is visible on the surface of the skin. This article will discuss stoma creation and the care of a stoma, as well as the complications and effects of living with one. Although the focus of this article is urinary stomas, the care is similar for all types. It is imperative that all care providers understand stoma care and potential problems that may arise. There are ongoing issues of quality of life for children with stomas, including body image and peer reaction. School nurses are in a unique position to educate children and families on the proper care of a stoma, to recognize potential complication, and to educate staff and student peers.

KEY WORDS: catheterize, ostomy, stoma

INTRODUCTION

The word *stoma* is derived from the Greek word for mouth or chasm and means a surgically created opening linking an internal organ to the exterior of the body. An ostomy is the surgical creation of a stoma that allows the body to perform its normal function. The stoma may be an artificial opening into the urinary tract, gastrointestinal tract, or the trachea. Although the words *ostomy* and *stoma* may be used interchangeably, they do have different meanings. An ostomy refers to the surgically created opening in the body, whereas a stoma is the actual end of the internal organ that can be seen on the skin surface. The history of stoma creation "can be traced back to biblical times, with accounts of spontaneous fistula formation from trauma or strangulated viscera" (Colwell, Goldberg, & Carmel, 2001, p. 2). This article will present an overview of the various types of ostomies and focus on one specific type familiar to school nurses, the urostomy. A urostomy is used for urinary diversion or to facilitate access to the bladder.

Pediatric patients with urinary diversions or intestinal ostomies continue to be a challenge for health care providers. The school nurse's role is vital in providing quality care for these children with appropriate intervention when monitoring these children for potential complications. The family must be educated and provisions and supplies must be available for the school nurse. This article presents a brief overview of various ostomies, as well as stoma care and identification of potential problems.

CREATION OF URINARY STOMA

The rationale behind any ostomy surgery is to create an opening to allow for the passage of urine (urostomy) or feces (colostomy) for those who cannot manage elimination normally, to provide nourishment for a person unable to swallow (gastrostomy), or to bypass secretions or stricture, as in the case of a tracheostomy. Urinary diversion procedures are created to treat diseases of the urinary tract or to facilitate easier drainage of urine for children, such as those with spina bifida, whose dexterity may be compromised. There are two categories of surgical treatment for urinary elimination: incontinent and continent urinary stomas (Epps, 1996). There are a number of historic surgical

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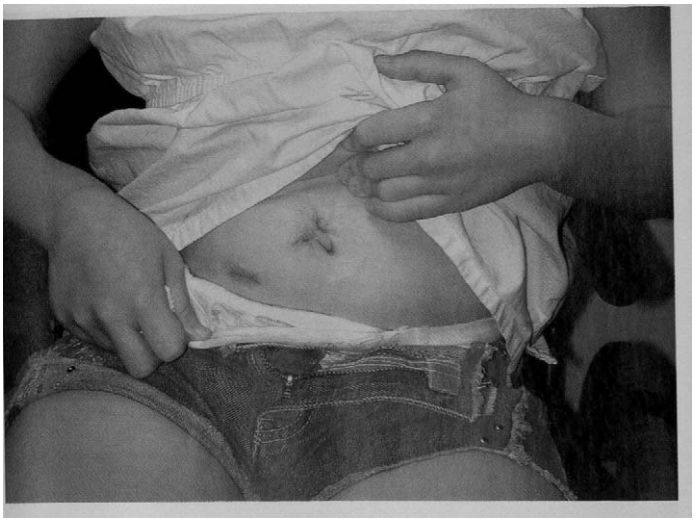

Figure 1. Stoma

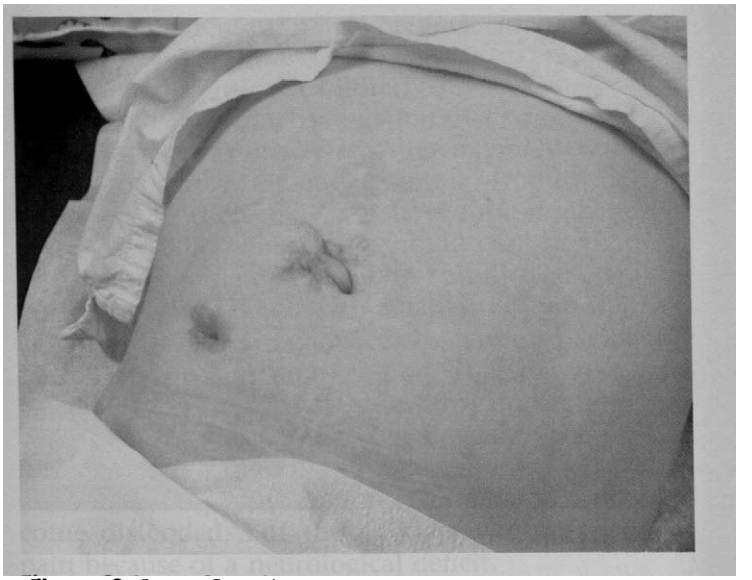

Figure 2. Stoma Location

procedures that have made significant contributions in the area of stoma creation and location, as well as the progression from incontinent to continent stomas. A greater understanding of the physiology of the gastrointestinal system, bladder, and continence has led to the development of continent diversions that more closely mimic the native bladder's function (Michel & DeKernion, 2002). In recent years there has been a revolution in reconstructive surgical techniques. Regardless of the differences in procedures, the basic principles apply to all continent diversions. The major objective is to construct a large-capacity, low-pressure reservoir that has an adequate antireflux mechanism (Hensle & Ring, 1993).

Continent urinary reconstruction generally involves an internal reservoir, usually created using the intestine and bladder (augmentation cystoplasty) or intestine alone. This requires catheterization, usually through a stoma, at regular intervals to drain the urine. Two common procedures are the Kock continent ileal reservoir (using small intestine) and the Indiana pouch (using large intestine; Michel & DeKernion, 2002).

These procedures not only help to establish continence, but also improve quality of life by allowing greater independence.

One of the most common procedures performed for ease of catheterization is known as the Mitrofanoff (Figure 1). In this procedure, an end of a vascularized tube of intestine is implanted into the bladder and the other end brought out to the abdominal wall. A flap valve is then created (usually from the appendix), resulting in a catheterizable stoma. This greatly enhances the ability of children who self-catherize, such as those with spina bifida, to do so from their wheelchair via a continent stoma placed in the area of the umbilicus or elsewhere on the abdomen. These procedures not only help to establish continence, but also improve quality of life by allowing greater independence. If the child has organic bladder dysfunction, a bladder augmentation also may be performed. This involves patching a piece of the gastrointestinal tract onto the bladder, increasing capacity and lowering bladder pressures (Borer, 2003).

Although the focus of this article is the care of urinary stomas, one would be remiss not to mention a bowel procedure known as the MACE (Malone antegrade continence enema). For children with neurogenic conditions such as spina bifida, urinary and fecal incontinence are closely linked. It is easy to confuse the urinary stoma with the MACE stoma, because they are similar in appearance and proximity (Figure 2). There are a number of disease entities that cause fecal incontinence or constipation which require treatments such as enemas or manual disimpaction. Many individuals are not satisfied with these treatments, partly because of continued fecal incontinence, constipation, psychosocial problems, and lack of self-reliance. A continent appendicostomy, the MACE, can be created to facilitate colonic drainage by the use of a daily antegrade enema. This procedure has been used successfully to treat fecal incontinence or constipation in children with anorectal dysfunction and a variety of conditions such as spina bifida. The end result of this surgery is the creation of an abdominal stoma. The child is then placed on a toilet daily and the MACE stoma is irrigated with a quantity of normal saline so the child remains free of fecal soiling for 24 hours.

Overall, the end result of these surgeries, whether for nourishment or elimination, is the formation of a stoma. The stoma is located somewhere on the abdominal wall of the child. A continent urinary diver-

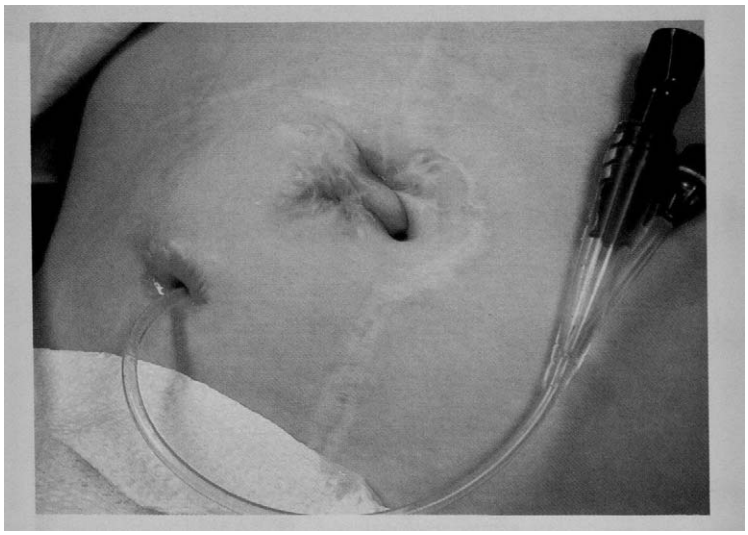

Figure 3. Catheterized Example

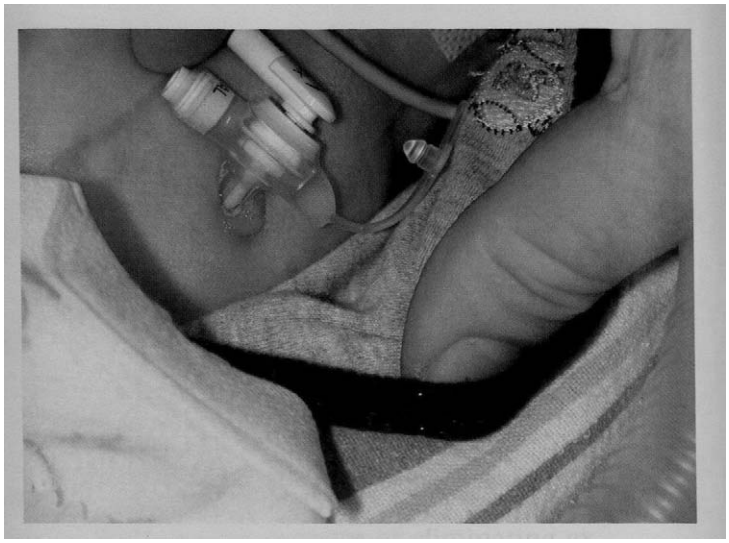

Figure 4. Hypergranulation

sion now allows for flexibility in stomal location. Catheter access to the newly constructed or existing bladder can be placed in any location on the abdominal wall or umbilicus (Hensle & Ring, 1993). The actual site may depend on the availability of native tissue, as well as the manual dexterity of the child (Figure 3).

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STOMA COMPLICATIONS

Hypergranulation Tissue of Stoma

Normal granulation tissue appearance is pink to red with a slight out-pouching that is the result of the formation of new connective tissue (Stansfield, 2002). Hypergranulation tissue is "granulation tissue progressing beyond the level of the wound bed. It inhibits the migration of epithelial cells and therefore delays healing" (Crawley-Coha & Colwell, 2004, p. 197). The tissue may bleed easily and may drain fluid. The skin around the tissue may appear erythematous and contact with a skin surface device (e.g., indwelling catheter) may increase the irritation (Figure 4).

Table 1. Internet Websites

Spina Bifida Association of America (http://www.sbaa.org)
National Dissemination Center for Children with Disabilities (http://www.nichcy.org)
United Ostomy Association—Pull thru network (http://www.pullthru.org)

Treatment for hypergranulation tissue usually consists of chemical cautery with silver nitrate. After the tissue is cauterized, it has a gray appearance and eventually sloughs off. This procedure may need to be repeated a number of times for complete resolution of the problem. In rare cases, the tissue many have to be surgically excised (Borkowski, 1998). There are multiple theories regarding the causes of hypergranulation tissue, including friction and excess moisture. If a nurse is not familiar with the appearance and drainage associated with this tissue, it is easy to assume there is an infection.

Infection of Stoma Site

Infection at an ostomy site may occur in the same way as any other postoperative infection. Several types of bacteria live on the surface of the skin or colonize the moist linings of the urinary tract, lower digestive tract, and other internal surfaces. These bacteria are normally harmless, as long as they are kept in check by the body's natural barriers and immune system. However, when there is disruption in the body's normal defenses, infection can occur. Symptoms of infection may include pain, change in stoma appearance (e.g., erythema around stoma site), fever, loss of appetite, nausea, and vomiting. A minimal amount of erythema is normal for a period of time after surgery, but prolonged or new onset erythema or edema should be treated (Figure 5).

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For mild infections, a topical anti-infective (e.g., Bacitracin) is sufficient treatment. More serious infections may require oral antibiotics. If the skin has mac-

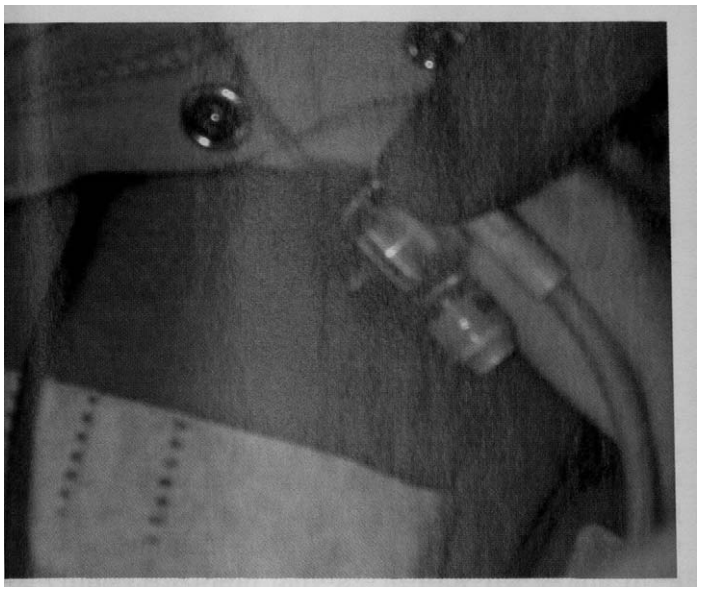

Figure 5. Infection

eration, papules, or vesicles, interventions may include antifungal agents such as Mycostatin powder (Borkowski, 1998). Infection also may lead to stomal stenosis.

Stomal Stenosis

Stomal stenosis is a narrowing of the stoma, which slows the flow of urine. When this occurs, the child or caregiver may first notice the problem when attempting to catheterize the stoma. The stenosis may be caused by infection, hypergranulation of stoma tissue, or the formation of scar tissue. Immediate follow-up of this condition is essential. Dilatation of the stoma may be emergently necessary. Typically, this is accomplished with the use of indwelling catheters of gradually increasing size over a period of several weeks. If left untreated, this may lead to a surgical revision. Furthermore, if repeated attempts at catheterization are performed without treating the stenosis, the end result could be bladder perforation, a life-threatening event.

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Bladder Perforation

Bladder perforation can occur as a result of traumatic catheterization. Early clinical identification of a problem, appropriate referral, and prompt intervention are the keys to successful diagnosis and management. Symptoms may include complaints of suprapubic or abdominal pain. A child who has undergone a bladder augmentation may present with an acute abdomen or vague illness with nausea, vomiting, and abdominal distention. Children who are neurologically impaired may not have abdominal or pelvic pain, but may develop urosepsis. After augmentation, the biggest concern is a bladder rupture. Due to the lack of sensation, there may not be symptoms until the child is very ill. Nurses also should consider perforation of the augmented bladder in an ill child, because the condition presents with a variety of symptoms. A bladder perforation may occur because of inadequate catherization or incomplete emptying due to a false passage that may have been created during attempts to catheterize. If a false passage develops, the bladder is not emptied, and a minimal amount of urine is drained during catherization. The abdomen may become distended, but the child may not experience pain because of a neurological deficit.

Urinary Tract Infection

Almost everyone who catheterizes has bacteria in the urine. This is not necessarily a problem. Practitioners want to be sure they do not overtreat a bacterial infection in the urine. If a child who catheterizes is treated every time bacteria are found, more resistant bacteria will grow. Eventually it will be difficult to find an effective oral antimicrobial agent. Urinary tract infections that are symptomatic should be treated. Symptoms may include a foul odor or discharge, a change in mood or personality, or tiredness.

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STOMA CARE

Nurses must understand the reason why a child's stoma has been created. They should be knowledgeable about various types of stomas they may encounter in their practice. It is essential that health care professionals and caregivers understand what is involved in the delivery of care and what to do if something goes wrong. Stoma care is a fundamental part of practice for any health care professional who encounters children with ostomies. The primary concern in stoma care is to prevent complications.

A major concern with an ostomy is the need for stoma care. Ostomy care is not difficult. The urine or stool from the stoma may be collected in a specially made pouch. In the case of a gastrostomy, there is a "button" that lies flush against the skin so that the entire skin area can be observed for complications. In

the case of a continent urinary stoma, there is no appliance. In fact, if the stoma is located at the umbilicus, it may be difficult to distinguish one from the other. Stoma skin care requires only mild soap and water, and it is okay to take a bath or shower. Children with continent urinary reservoirs are taught to self-catheterize the bladder at intervals during the day and night.

SCHOOL CONSIDERATIONS

Students with chronic diseases, as well as other health problems, have made it essential that school nurses gain expertise in pediatric nursing. The need for nursing services in the school setting increased with the passage of Public Health Law 94-142 in 1975, requiring the mainstreaming of physically challenged students into the general student population. Children with disabilities are required to have a 504 health care plan. Decisions about what educational and health care services are appropriate for a child under Section 504 must be made by a placement team that includes persons knowledgeable about the child (National Dissemination Center for Children with Disabilities, 2004). The following strategies can help accommodate students with special health care needs, such as a clean intermittent catherization schedule:

1. Develop health care and emergency plan.
2. Educate staff and students.
3. Implement universal precautions.
4. Provide trained personnel to perform special procedures.
5. Include daily inspection of stoma site and care.
6. Provide student with private location and time to perform procedures.
7. Involve school nurse, parents, teachers, and staff.
8. Allow preferential seating.
9. Modify classroom environment.
10. Adapt recess, physical education, and transportation.
11. If necessary, modify attendance policy.
12. Provide school counseling.
13. Arrange for trained personnel on field trips.
14. Reevaluate needs periodically.

CASE STUDY

Marc is a 9-year-old boy who was born with spina bifida. This condition occurs in approximately 1 of every 10,000 births and is the most common of the neural tube defects. Paralysis usually results from damage to the spinal cord. Individuals born with spina bifida require extensive medical care and almost always have bowel and bladder complications.

Children with spina bifida have multiple physical, emotional, and social challenges. The primary goal of caregivers is to create an environment that fosters independence. Mobility generally can be achieved with the use of crutches, braces, or wheelchairs. With new techniques, children can become independent in managing bowel and bladder functions. School nurses are in a unique position to be able to promote healthy outcomes for students with special needs. The health office, if properly designed, can provide an atmosphere where children and adolescents can feel sheltered and are allowed privacy when discussing or addressing their health care needs.

To promote independence, Marc has undergone two surgeries to achieve bowel and bladder control, resulting in two abdominal stomas. One is used for daily bowel irrigations (MACE), and the other is a continent urostomy. Both stomas were created as a result of reconstructive surgery he had more than a year ago. His urostomy is catheterized every 4 hours, and his MACE is irrigated each evening. Marc is a bright and energetic child, so it is disconcerting to the school nurse when he arrives at her office for his daily catherization and is not acting like himself. He is complaining of feeling tired and nauseated.

The nurse completes a brief physical exam, including vital signs, ears, nose and throat, neurological exam, and abdominal assessment. His abdomen appears distended, but the nurse is unable to assess for pain due to his neurological deficit. His vital signs are normal. His urostomy stoma site is erythematous, excoriated, and has a yellow mucous discharge. Marc has been taught to self-catheterize, but is unable to do so. When the nurse attempts to catherize him, there is difficulty with catheter insertion. The urine return is minimal and foul smelling, with thick mucous and streaks of blood.

Therapeutic Plan

The therapeutic plan is to refer him immediately to his primary care provider and specialist. He will require treatment for a possible urinary tract infection, as well as medical or surgical intervention for the stomal stenosis. Once the immediate problem of stenosis is addressed, it is incumbent on all of his caregivers, including the school nurse, to care for his future needs. Requesting feedback regarding diagnosis, intervention, and follow-up treatment assures continuity of care in the school setting.

Care Plan

The school nurse should have a plan of care in place for relating to Marc's urinary retention and need for intermittent catheterization (Table 2).

- *Urinary Elimination* (*Nursing Outcomes Classification,* Moorhead, Johnson, & Maas, 2004).
- Client Outcome—Completely and regularly drains urine from the bladder and remains free of upper urinary tract damage, defined as suffi-

cient renal function and absence of febrile urinary tract infections.

- *Urinary Catherization (Nursing Interventions Classification,* Dochterman & Bulechek, 2004).
- Client Teaching—Teach the child and caregivers how to perform self-intermittent catheterization, including the use of clean technique, good hand washing, washing the catheter with soap and water, and reuse of catheters.

IMPLICATIONS FOR SCHOOL NURSING PRACTICE

School nurses need to be aware that children who have stoma surgery are faced with a lifelong change to their body image and their lifestyle. The presence of a stoma may create embarrassment during physical and social activities (Teitelbaum, 2003). Children may be embarrassed and may try to hide the stoma from their peers. As they grow and approach puberty, they may become resistant to following catherization routines. Adolescents are known to be resistant to authority and rules; children who catheterize are no different from their peers. One needs to consider these issues, as well as differences in culture and religious beliefs (Borwell & Couns, 1997). When supporting these children, effective family teaching and communication is essential. School nurses play a vital role in the care of these children and should be part of the team. It is through effective communication and collaboration of the entire team that children and families receive correct information, as well as the coping skills needed for lifestyle changes.

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In most situations, students with special needs and the school nurse can develop a meaningful relationship. The school nurse is often viewed as knowledgeable and trustworthy by parents/guardians. The school nurse must be acutely aware of the physical and psychosocial profile of the student and knowledgeable about his or her disability, as well as any alteration of body functions specific to the student. The student also may view the nurse as a confidant and may relate information about his or her psychosocial, as well as physical, concerns. Physical disabilities such as spina bifida can have profound effects on the child's emotional and social development. It is important that health care professionals, teachers, and parents understand the child's physical capabilities and limitations. To promote personal growth, they should encourage children to be independent, to participate in activities with their nondisabled peers, and to assume responsibility for their own care (Table 1).

School nurses are in a unique position to advocate for the children they serve. "The school nurse serves as an advocate for the school nursing specialty and the provision of student health services. It is the responsibility of school nurses to strengthen their role by informing policy makers about the needs of students and the scope of current nursing services that impact the educational community" (National Association of School Nurses, 2003). It is incumbent on all caregivers to be aware of treatment of those entrusted to their care, to be able to recognize a complication, and to know how to intervene. Communication among all members of the health care team is essential to provide continuity of care for these children and their families.

Table 2. General Accommodations for Students Who Catheterize

- Sufficient supplies should be available.
- Access to a private area in which to perform catheterization.
- Student should have ready access to nurse's office.
- With parent's permission, school nurse should educate staff.
- Student should have adult supervision as necessary.
- School nurse or delegate should assess the stoma site daily for any signs of problems.

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